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THE RUBBER CONGRESS IN BATAVIA.

MENTION has been made a number of times in these columns of the International Rubber Exhibition and Congress to be held in Batavia, Java, from September 7 to October 10 next. The preliminary program of that event will be found on another page of this issue. At first blush this exhibition, which is to continue for more than a month, might seem rather an ambitious undertaking for the rubber planters of Java and the neighboring islands, but it must be borne in mind that the rubber plantations in Dutch East India, scattered over Sumatra, Java and Borneo, represent an investment of $90,000,000 and are rapidly growing in extent and importance.

The promoters of this congress have secured a number of the best known rubber men of Europe as speakers on that occasion. Incidentally it might be added that the editor of THE INDIA RUBBER WORLD has accepted an invitation to deliver an address on the second day of the conference on "What Manufacturers Desire in Crude Rubber," and he has also contributed a substantial and suitable solid silver cup—described in more detail in another column—to be offered at that exhibition for the best system of extracting gutta percha. For quite a good many years after the inception of the Eastern plantation idea American manufacturers took but scant interest in the subject; but in view of the fact that today the largest plantation of the East belongs to Americans —the United States Rubber Co.'s 35,000 acres in Sumatra —it is very evident that the day of American indifference to Eastern planting matters is past.

WILL THE NEW BANKING ACT HELP CRUDE RUBBER FINANCING?

IT has long been felt that the present system of financing rubber importations from South America through London banking houses is unnecessarily indirect and expensive, but hitherto the law has not permitted an American bank to accept a draft payable at some future time, and this situation has greatly interfered with our foreign trade and placed a burden upon the financing of American imports. During the last two years we have imported from the Amazon about 90,000,000 pounds of rubber, with a value of about $60,000,000. The extra cost of doing this through a London bank—that is, the commission charged at that centre—has ranged from one-quarter to one-half per cent., making a tax on American rubber manufacture during the last two years of about $200,000. This of course is not a momentous matter compared with the $225,000,000 which represents the annual value of our finished product, but at the same time it seems like an unnecessary expense.

One provision in the Federal Reserve Act recently passed by Congress aims to remedy this situation, as it permits American banks to accept drafts dated ahead in order to assist the financing of our import and export business. But it appears to be the general opinion among New York rubber importers that no immediate change will take place in our present method of paying for purchases of South American rubber.

There are two requisites for international banking—credit and machinery. And both of these the English banks possess. It has so long been the custom of South Americans to carry on their foreign trade through English banks that they are not likely without good cause to depart from the beaten path. And there is another reason why the English banker would be difficult to dislodge—and that is the fact that while the United States takes about $125,000,000 worth of the annual Brazilian exports, or over one-third of the whole, we supply that country with only about $40,000,000 worth of goods annually, or about one-fifth of its entire imports, leaving Europe to supply the rest. As long as this great dis-

parity in favor of England and the Continent continues the present banking system is likely to remain. Some day undoubtedly we will transact our financial operations, in the purchase of Amazon rubber, directly between New York and Pará, but not until the value of the Brazilian imports from the United States more nearly approaches the value of American imports from that country.

THE NEW MARKET OPENED BY THE PANAMA CANAL.

MUCH has been said about the vast new market for American goods which will be opened up on the completion of the Panama Canal, and the manufacturers of the United States have been entreated to make ample preparations to occupy this market before it has been preempted by our active rivals across the water. This is good advice and American goods ought certainly to be much more largely in evidence on the West Coast of South America than they ever have been along its Atlantic side.

On the surface, at least, it looks as if this new market were most promising. Here is a vast stretch of territory extending from the Pacific to the Andes, and over the Andes, and reaching from the Isthmus of Panama to the Strait of Magellan—a distance of almost 5,000 miles—and occupied by about fifteen million people, who hitherto have been so remote as to be of comparatively little interest to us, but who now in the matter of trade are to be brought almost to our doors. This would certainly seem like a great opportunity for extending our commerce.

But here is an instance where enthusiasm should be tempered with discretion, for these fifteen million people are not altogether like an equal number of our own countrymen. In fact the situation is far otherwise. To go a little into detail—there is Colombia with five million inhabitants, only 300,000 of whom are white, the rest being of mixed breeds or Indians and negroes; and Ecuador with 1,500,000 people, only 150,000 of them being white and one million of them being Indians;—and so on down the coast. Of the fifteen million the Caucasian element represents about one-eighth. The mestizos or mixed race constitute a little less than one-half, while the rest of this aggregation—or nearly one-half—is composed of negroes and Indians. Obviously, this is quite a different market from any that the American manufacturer is familiar with. Its ability to absorb manufactured goods in great variety and in large quantities has yet to be proved.

The opening of the canal will undoubtedly substantially increase the prosperity and the buying power of our neighbors along the West Coast of South America, and these communities will begin to develop as never before, but in view of the ethnological character of a vast majority of these people this development is not likely to be phenomenally rapid. It seems quite safe to predicate, therefore, that while the Panama Canal will assuredly open up a new and ever expanding market for American goods, it is a market that must be investigated with care and entered with considerable circumspection.

THE TIRE BRINGS BACK THE WAR CHARIOT.

WHEN Achilles and Agamemnon and the rest of that breed of hard hitters went forth for a brisk afternoon's work they mounted their war chariots and started for the fray on wheels; but later the war chariot fell into conspicuous desuetude—it was too unwieldy and too uncomfortable—and for many centuries the faithful horse has been looked to to provide military leaders with the necessary transportation.

But this mess in Mexico, if it has effected no other purpose, has at least served to show that the war chariot is back in the game; changed a little, to be sure, depending on gasolene for its propulsion and on the rubber tire to give it smooth passage over the ruts and rocks. Early in the proceedings both the Federals and the Rebels got possession of as many high-power autos as their cash and credit could secure, and these machines—about a hundred of them, all told, in the two armies, and practically all of American make and shod with American tires—have been in constant use for the swift mobilization of the commanders and their staffs.

As the motor car has pushed the horse—a fine fellow, but with obvious limitations—out of many of his peaceful vocations, so it seems destined to crowd him out of his proud place at the head of the advancing column. This is a move in the right direction, for war, as General Sherman used to say, is nasty business; and if men conclude that nothing will do but they must get out their guns and pump away at one another it is much better to leave the unoffending horse out of it and use as a substitute target the rubber tire, which when punctured to pieces under the deadly fire the manufacturer stands ready and able, and extremely willing, to replace.

HOW THE RUBBER COUNTRY SERVED THE COLONEL.

THE foremost American citizen—at least in private life—has just emerged from a three months' jaunt through the rubber country of the Madeira. To be sure,

he did not embark on that tour of exploration primarily to acquire information about the *Hevea Brasiliensis*, but undoubtedly when the interesting story of his travels is told it will be found to contain much of importance on the flora as well as the fauna of that hitherto unexplored region. But even before the appearance of this exciting chronicle his experience is certainly most illuminating in regard to the ability of the white man to endure the multiform hazards of that wild domain.

Here is a man with a constitution of iron and nerves of steel, who led the fighting regiment of the Spanish war and returned home, as he expressed it at the time, "disgracefully fat"; who guided the ship of state for seven years through continuous tumult and never lost an hour's sleep; who spent a winter in the heart of Africa and hardly once removed the cork from his pocket flask of health invigorator—and yet after a few weeks along the waters that feed the Amazon he emerges with forty or fifty pounds of good American avoirdupois left in the jungle, celebrates his arrival in New York harbor by a succession of chills and comes down the gang-plank leaning on a cane. Not that anybody need to fear that this distinguished American is permanently disabled—for it would take more than three months in any locality known to geography or mythology to efface or even seriously curtail the doughty Colonel—but his sojourn on the unknown tributaries of the Amazon certainly left its marks.

This emphasizes the tremendous advantage which the Eastern plantations enjoy over the wild rubber districts of Brazil, for in the plantation country the white man not only can live but can pursue his vocations in as regular a fashion and under as comfortable conditions as at home, while along the waters of the Amazon the native must gather the rubber unattended, as no white man can long keep him company there.

But this may all be changed some day. This clean-up idea that has lately seized upon our American municipalities is not a local fad; it is steadily moving around the globe, and sanitary science is attacking one plague spot after another. Some day it will undoubtedly reach the basin of the Amazon, and white men will then be able to work in those vast rubber districts without the perpetual presence of the dread and deadly fever.

THE INCIDENTAL INJUSTICE OF JUSTICE.

IT is certainly difficult, if not quite impossible, so to frame a law, no matter how salutary in its general effect, that it will not operate to the detriment of some innocent person. If the law is intended for the protection of the good it is quite likely to extend some protection to the evil; and if its intent is the punishment of the vicious it often happens that some of the virtuous also feel its punitive possibilities.

The statute enacted in the State of New York some time ago compelling large corporations to submit their lists of stockholders to any stockholder who might ask to see them was undoubtedly most wholesome in its intention, its purpose being part of the general plan to make large corporations do their work in the open, where investors and possible investors may get some idea of their operations; but this enactment has given rise to a new industry which is bound to be harmful in proportion as it is successful. A number of people, either individually or in partnership, have purchased a single share of stock in the big corporations (this entailing practically no expense, as the share can be sold at practically the same figure when it is no longer needed) and, armed with this certificate, have demanded the company's list of stockholders. This list has then been copied and sold at a very profitable figure to that class of operators who supply the public with shares in imaginary rubber plantations and non-existent oil wells. So this statute, intended to give a proper publicity to the operations of the giant corporations, in reality, as one of its minor effects, compels them to expose their stockholders to all the wiles of the conscienceless promoter and the purveyor of assorted gold bricks.

RETALIATING ON THE PEDESTRIAN.

THE annual crop of automobile laws is now about in, and it compares quite favorably with former years. Most of the State legislatures have put up their shutters for the year and the lawmakers gone back to their confiding constituents for a season of well-earned repose. During the sessions of the legislatures recently closed 182 bills were introduced affecting the status and regulating the activities of the motorist, but fortunately only 23—hardly more than one-eighth of them—passed, and none of them was of a character greatly to distress the automobilist or those interested in his well being. Most of these acts related to the use of lights, the regulation of speed, registration and other matters which properly come within the scope of legislative action. Accordingly the product of the law-producing machinery for the season of 1913-14 may be placed under the general classification of "Might Be Worse."

But notwithstanding the inoffensive nature of this legislation word comes from a Middle West city that the motorists of that place propose some retaliative measures aimed at the non-motorists. The Auto Club of this particular city is bending its energies to have an ordinance passed making it a misdemeanor for the pedestrian to cross a street anywhere except at the corners. That is, if Mrs. Smith lives in the middle of the block and her daughter Jane just across the street, and Mrs. Smith wants to run over and see how matters are progressing at Jane's, and she cuts across instead of trudging to the corner and back again, she is liable to arrest, fine and probably imprisonment. The contention of the automobile club is this—that pedestrians never get run over at the corners, as the chauffeur at that point is on the lookout, but that accidents almost invariably occur between corners, as the chauffeur's vigilance is then relaxed.

Of course one sympathizes with the motorist, who naturally dislikes to run over more persons than is necessary, but it is quite probable that a city ordinance forbidding pedestrians the use of the streets except at the regular corner crossings would hardly stand the test of constitutionality, for altho the owners of autos purchase in the course of the year $125,000,000 worth of tires and are therefore entitled to profound consideration, the plain people who plod about on the humble feet that nature gave them are still generally held to have some rights to the highways. At any rate there are a great many of these plain people and it will not answer to get too jaunty with them.

BOYCOTTING OLD JOHN BARLEYCORN.

THAT ancient and obstreperous institution, the saloon, which has viewed with serene indifference all efforts of the moralist to dislodge it, is now beating an ignominious retreat before the ruthless advance of the efficiency expert. The railroads discovered some years ago that a man with a few assorted drinks diffused through his works was a poor person to trust a trainload of human freight to. Then manufacturers began to suspect that alcohol was of no particular efficacy in helping a workman run a complicated machine.

The American Foundrymen's Association, through its Committee on Prevention of Accidents, is trying to drive the saloon to a wholesome distance from all foundries. The committee is gathering records of injuries resulting from the proximity of bars to the shops, and every evidence of the loss of life and limb among foundrymen attributable to too easy access to the saloon will be laid before the legislatures of the different states.

This is a subject of just as much importance to manufacturers of rubber goods as to those who work in steel and iron. Every plant where men and machinery are operating together in the serious work of useful production—and particularly every factory where the work is at all hazardous and where carelessness may be attended with disastrous results—should have a good wide safety zone around it within which the Demon Rum should never be permitted to show horn or hoof.

RUBBER WORKS FOR THE HUMAN INTERIOR.

HIGHLY exhilarating reports come from abroad to the effect that a learned surgeon associated with the University of Paris has succeeded by certain experiments on human subjects in showing "the feasibility of grafting india rubber on living tissue." Two illustrations are cited, one where the experimenter—according to the report—inserted a thin layer of rubber between the bone and flesh of a finger and another where—the patient evidently, after the manner of mankind, having some stomach distress—"a thick sheet of rubber grafted into the abdominal cavity gave absolute and permanent relief."

The average layman has become a little inclined to hesitate in accepting at their face value all the reports that come from the laboratories; he is rather disposed to label them "Valuable When Verified." Not that the researchers would be guilty of inveracity, but simply that the wonderful discoveries made behind laboratory doors sometimes take on strange and startling aspects when they leak out into the outside world. But if these latest reports should prove true, and if one's interior repairs could all be made by proper rubber adjustments, what a boon it would be! How fine when one is out of sorts to get back into condition again simply by the proper insertion of a rubber plate here and a rubber disc there and the introduction of a few assorted rubber tubes! Perhaps the day will come when a man who isn't quite up to the mark can go into the nearest rubber store and select for himself a new pericardium of Upriver fine and a guaranteed esophagus of Plantation pale crêpe. What would be more satisfying when a man is conscious of being a little under the weather than to take an afternoon off and have all his vitals revulcanized!

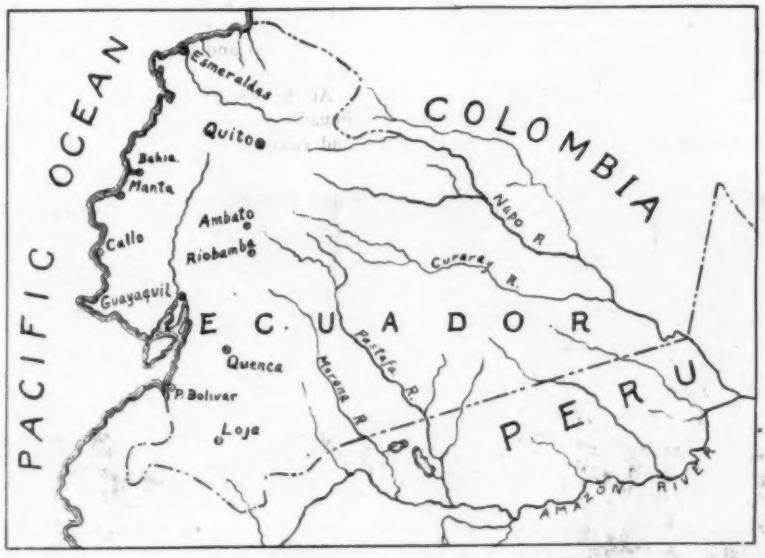
RE RUBBER THIEVING.

THE whole trade is to be congratulated upon the quiet persistence with which rubber manufacturers and wholesale scrap dealers report to the Rubber Stealings Committee of the Rubber Club offerings of suspicious lots of rubber. The alertness of the committee in following up the information thus secured is also to be commended. Their plan of dealing with the thieves, while bearing the impress of novelty, is perfectly sound and very far-reaching.

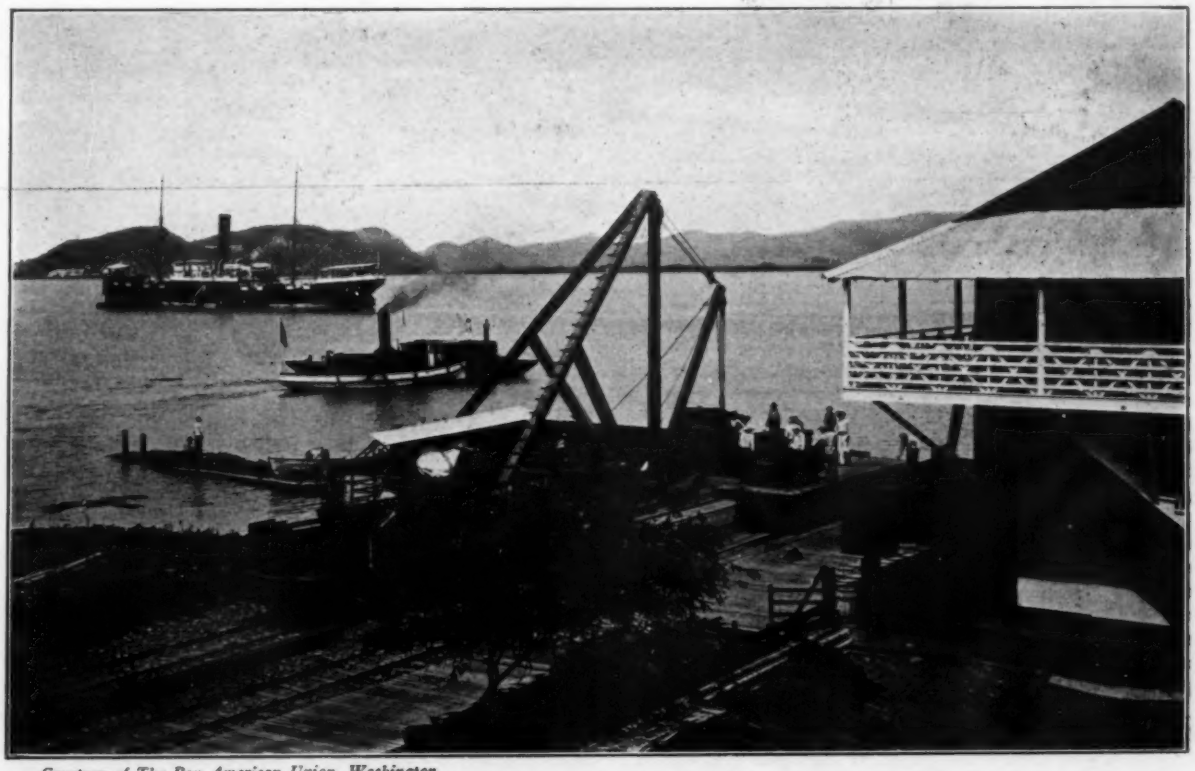
Foreign Trade Opportunities—II.

ECUADOR.

EVERY person of middle age remembers the alluring pictures of the Republic of the Equator which were in the geographies of his early youth. The palms and bananas at the foot of the mountains, the temperate zone productions of the higher slopes, the stunted trees still higher, the glistening snows with which the serried peaks were finished; the picturesque city of Quito, basking in the smiles of eternal spring, nearly two miles toward the sky, and in the background a volcano comfortably blowing out its clouds of smoke. We gave faith to the pictures, but it was much like a fairy tale, after all. It seemed as far away as the moon, as inaccessible as the north pole, and, with most of us, that impression has remained to this day. As a matter of fact the chief city of Ecuador is not so far from New York as is Carson City, Nevada. The trip, first-class, can be made for only a few dollars more. There are no difficulties in the way of the journey except such as imagination may make, and when the traveler arrives he will find that the old geographies have understated the marvels of this favored land. But, he asks, how is he to see the interior, the land of perpetual spring, the snowy peaks, the smoking volcanoes, the llamas, with their chins up in the air like an aristocrat visiting the slums? He admits that he is not now, as once, attracted by pictures of Ecuadorean travel—



OUTLINE MAP OF ECUADOR.



Courtesy of The Pan American Union, Washington.

SCENE IN THE HARBOR OF GUAYAQUIL, ECUADOR.

mules gracefully filing around corners on ledges eighteen inches wide above chasms a thousand feet deep; or, perhaps, a dark, long-haired native crossing a similar abyss on a rope-bridge and carrying on his shoulders a chair in which sits a fair and meditative senorita. It is all right in pictures, he says, awfully interesting in reality, but he does not, as in his youth, hanker for the pleasure of personal experience. We may at once admit that he is entitled to his prejudices, and suggest that if he wishes to visit Quito in less trying fashion he may take a train on the newly-built railroad from the seaport, hand up his ticket to an American conductor, and, when he arrives at Quito, get off and go to a hotel. That is the way they do it now, and the distance is less than 300 miles by rail.

Ecuador has an area about as great as that of Nevada, with a population fifteen times as great. A majority of the population are of Indian, or partly Indian, descent, but wholly civilized,

Courtesy of The Pan American Union, Washington.

THE MARKET PLACE IN QUITO, ECUADOR.

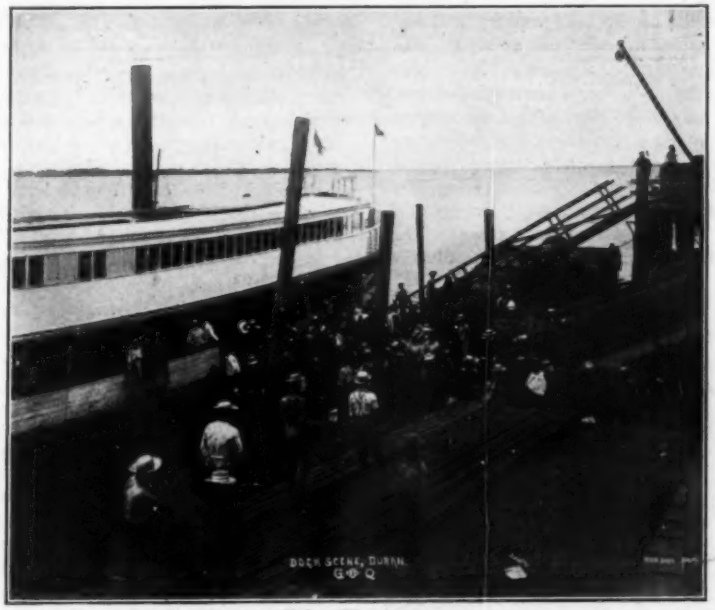
and such peaceful occupations as agriculture and stock-raising furnish employment to the greater number. In the production of cacao Ecuador leads the world. This valuable article of food and drink was first exported from Ecuador less than forty years ago, but the planters have found such profit in it that the production has risen to a hundred million pounds. This supply, great as it is, is less than the consumption in the United States. Much of it goes to Europe, and then back across the ocean to us. There is no reason why this should continue. The crude product realizes to the grower only about ten cents a pound, and enters our ports duty free. When it reaches the consumer as chocolate, cocoa or cocoa-butter the price has been advanced by an average of 500 per cent. With the opening of the Panama Canal the seeds should be shipped directly from the plantation to the American factory, and the food products sold at reasonable cost. The ships that bring the cacao will bring also rubber, coffee, rice, cocoanuts and other tropic products, for which we have such insatiable need.

These ships, if they are to run, must have freight both ways, and it is in order for American manufacturers to think about what they are going to send to the market that is waiting for them. From New York to Guayaquil, by the Strait of Magellan, is over ten thousand miles, a distance that will be reduced by the Panama route to less than three thousand miles. The present average of sixty-five days will be reduced to fourteen. Freight rates are bound to find a reasonable level. The commerce of Ecuador will be like the movement of a released spring, instantly responding when its bonds are removed. Production will be enormously stimulated, immigration on a large scale will be inaugurated and the demand for foreign goods multiplied many times.

At the present time the exports from the United States to Ecuador are mostly of a crude order—lumber, flour, kerosene and railroad materials. Such trade as there is, outside of the oil which is sold by a corporation always ready to look after business, may be said to be largely the result of accident, the outcome of orders for supplies for Americans who built the Guayaquil-Quito railroad. In more finished lines the United States occupies a very subordinate place, third, sixth or "also ran." The American business man still thinks of Ecuador as a semi-savage country, impossibly remote. He is governed by the geography of a bygone age, and his impressions are about as correct as those of the reader of the Ninth Edition of the Encyclopedia Britannica (superseded only last year) who is informed that the American Indian tribes living in the States west of the Mississippi river make use of horses, but that the tribes living east of that river do not do so because of the heavy forests with which the land is covered. The Ecuadorean, on the other hand, thinks that the United States, as a manufacturing or exporting country, must amount to very little. No traveling salesman ever comes to solicit his trade for an American house, and his dear friends, the European salesmen, are unanimous in informing him that the Americans are small potatoes and few in the hill.

Guayaquil is the port through which flows 90 per cent. of Ecuador's foreign trade. It has a population rising well toward a hundred thousand and, while in the past one of the most unsanitary of cities, is now putting its houses in order, that it may meet the demand of the world for modern sanitation at all its ports. The traveler who takes the railroad for Quito from this port passes through the reality of all the pictures of the old

geographies. He starts amid the palms and pineapples and gradually climbs to the zone of oaks and pines, of barley and potatoes. He gazes on Chimborazo, towering to the stupendous height of 21,220 feet, and glittering with eternal snow. He sees Cotopaxi, the highest volcano in the world. This wonderful mountain is 19,500 feet high, the peak rising as a perfect cone, the last 4,000 feet covered with snow, while from the top of this "chimney of the world," as it has been aptly called, pour volumes of smoke and steam. In its ceaseless activity it is different from most volcanoes, and always gives the traveler his money's worth. It is only 35 miles from Quito, which is a city of 80,000, with a history dating back to nearly a hundred years before the landing at Plymouth Rock. It is rapidly taking up modern improvements, and is the seat of the culture and aristocracy of the republic. Again be it said, this city of wonders is nearer to New York than any of the cities of our Pacific Coast. It is reached by means of modern first-class travel. Under the equator it has a mean temperature of about 60 degs.—or about that of New York in the latter part of May. With its newly found accessibility Quito is certain to become an object of travel, and one of the greatest health resorts in the world.



Courtesy of The Pan American Union, Washington.

DOCK SCENE AT DURAN, ECUADOR.

An American manufacturer of rubber goods who has two or three months for his vacation would combine business with pleasure in an eminent degree if he would make the trip to Quito, keeping his eyes open while on the way. He would learn, as he cannot otherwise, what are the possibilities of trade in this newly-wakened land.

Several facts as to the development of the immediate future give suggestive hints. It is certain that roads will be extended to reach the great forest regions of Eastern Ecuador, and these will furnish the country's supply of lumber, now largely imported, as well as furnishing cabinet woods for ex-

Courtesy of The Pan American Union, Washington.

IN FRONT OF THE MUNICIPAL BUILDING, QUITO, ECUADOR.

port; the abundant water-power will supply opportunity for electrical development and manufacturing on a large scale, thus furnishing a market for great quantities of mechanical rubber goods. The primitive agriculture of the high country will improve and become far more profitable, with the growing cities and the rich coast land for markets. Still more profitable will be stock-growing; and the shepherds, herdsmen and farmers, who, since the time of the Incas, have lived and done nothing more, will now have money to spend. Is there any doubt that these people, whose only climatic enemy is the frequent occurrence of torrential rains—often cold and always wet—will be rejoiced to learn of the existence of rubber coats, which will insure dry skins while they are at their outdoor tasks? The American cocoa-drinker wants his breakfast drink; the planter

Copyright by Underwood & Underwood.

GATHERING CACAO IN ECUADOR.

of the coast wants the potatoes and mutton of his country's uplands; the grower of these commodities wants his rubber coat. So the cacao is sent across the ocean, ground, and sent back to America with freights and profits added; the rubber of the forests makes two journeys across the Atlantic, and the American manufacturers in both lines let this profitable business go by, and busy themselves looking after the "home market," like the islanders who made money by taking in each other's washing. The rapid rise of wealth in the cities and among the planters means a greatly increased market for druggists' sundries and articles of luxury, and this market can be found by visiting Guayaquil and the towns on the railroad running from that port. With newly found prosperity among the poorer classes, they also will have wants. An enterprising manufacturer could derive no mean profits from the sale of toys and rubber balls among these simple-minded people, who are passionately fond of their children, and ready to make any sacrifice for their pleasure. It is safe to say that the native tradesman with a stock of rubber animals of the type familiar in his own district, alpacas, mules and sheep, would drive a busy and exciting trade, and the demand would never cease so long as little brown-eyed babies continue to be born in the valleys of the Andes.

After all, Ecuador occupies but a small place on the map of South America, but the manufacturer who studies it will learn much of wider import. He will learn that a business man who communicates with a South American merchant must do so in the Spanish language. He will learn that politeness in such dealings is not only desirable, but *sine qua non*. He will find that brusqueness, swagger and boast will not do. He will find, too, that he must obey instructions in the matter of packing. The railroad has climbed the Andes, to be sure, but the mules are not out of a job. Freight to hundreds of villages must make the final stage in the old way. It is liable to spend hours in the midst of a tropic rain, and there are other vicissitudes which the merchant knows and seeks to guard against by his careful instructions. When he finds those instructions deliberately disregarded, the goods ruined and payment insisted upon, his erstwhile dear American friend has become "a wooden-headed pig of a Yankee," and it is hard not to sympathize with his frame of mind. In the matter of credit, too, the custom of the country must be followed. The South American wants our goods, but he is not obliged to have them. England, Germany and France still have something to sell, and if they take the care and extend the consideration which the American will not, they will get the trade and deserve it.

At present there are seven lines of steamships carrying freight from New York to Guayaquil and the west coast of South America. Three of these sail via the Strait of Magellan, and four carry cargo via Colon, where it is transshipped and reloaded at Panama on steamers calling at Guayaquil.

The Merchants' lines have sailings twice a month for Guayaquil via the Strait of Magellan.

The steamers carrying freight to Guayaquil via Panama are the Hamburg-American Line, sailing every week; the United Fruit Co.'s steamers, sailing twice a week, and the Royal Steam Packet Co.'s steamers, sailing once every two weeks. The Panama Railroad Co. has six sailings a month.

Freight rates are levied in one of two ways, at the option of the steamboat companies—either by weight or by bulk. The freight rates on manufactured rubber goods, including tires, belting, hose and rubber goods generally, are 68 cents per 100 pounds, or 38 cents per cubic foot, via the Straits route, and 85 cents per 100 pounds or 47 cents per cubic foot via the Panama route.

Two steamboat companies operate between Panama and Guayaquil—the Pacific Steam Navigation Co., with boats sailing every ten days, and the Compania Sud Americana de Vapores, with sailings every week but not on regular days.

RUBBER GROWERS' ASSOCIATION.

The report to December 31, 1913, of the Rubber Growers' Association records the opening by that body of its own offices at 38 Eastcheap, in place of the agreement for accommodation with the London Chamber of Commerce. The membership roll now includes 368 companies and 171 individuals. A further extension of the membership is anticipated. Mr. Alfred Bonnin has been appointed secretary.

In order to meet its increased expenses, the association has had to readjust its subscription, which now stands at £1 1s. for an individual and £3 3s. for a company, with a further amount if the product for the 12 months under review has exceeded 100,000 pounds.

American Exports and Exporting Methods.

UNLESS attention is specifically drawn to it from time to time, the average person fails to comprehend the enormous business expansion this country has undergone in recent years, and, in particular, what a gigantic development has taken place in our exports to foreign countries. The Department of Commerce has just issued a statement which shows that the exports of merchandise from the United States made a greater advance during the last ten years than in the thirty years from 1873 to 1903. In 1873 the total exports were valued at $568,000,000; in 1903 at $1,485,000,000, and in 1913 at $2,484,000,000—a gain of $917,000,000 in the thirty years from 1873 to 1903, and of approximately $1,000,000,000 in the ten years ending with 1913. The principal items contributing to the gain of the last decade were raw cotton and miscellaneous manufactures, chiefly of iron and steel, copper, wood, and mineral oil.

The leading articles of export for 1913 in their order of magnitude are shown by the following tabulation:

Raw cotton	$575,000,000
Iron and steel	294,000,000
Bread stuffs	203,000,000
Meat and dairy products	161,000,000
Mineral oils	149,000,000
Copper	145,000,000
Wood manufactures	110,000,000
Coal and coke	71,000,000
Leather and leather goods	60,000,000
Tobacco	60,000,000
Cars and carriages	58,000,000
Cotton goods	56,000,000
Agricultural implements and machinery	35,000,000
Fruits and nuts	34,000,000
Electrical machinery and appliances	28,000,000
Chemicals, drugs and medicines	27,000,000
Naval stores	22,000,000
Vegetable oils	21,000,000
Paper and manufactures thereof	21,000,000
India rubber manufactures	14,000,000
Fertilizers	12,000,000

During the last ten years raw cotton easily maintained its position at the head of the list, but bread stuffs fell from second position in 1903 to third in 1913; meat and dairy products fell from third position to fourth, while iron and steel jumped from fourth to second. The gains made by some of these classes of exports during the ten years are almost incredible. The value of raw cotton exports increased $196,000,000, or 52 per cent., a direct reflection of the increased consumption of cotton goods throughout the world. Iron and steel gained $195,000,000 or fully 200 per cent., machinery and engines being the largest factors. Mineral oils increased 100 per cent. or $76,000,000 in value; copper manufactures $101,000,000 or 200 per cent., and manufactures of wood $52,000,000 or 90 per cent. Food stuffs, however, of all kinds, showed a falling off, due to the increased consumption in the United States without a corresponding increase in the production.

Manufactured articles have in practically all instances shown considerable gains. The most notable of these was in cars and carriages, which gained 500 per cent., due to the rapid development of the automobile industry during the last ten years. The electrical machinery exports were three times as large in 1913 as they were in 1903, while cotton goods and leather manufactures were twice as great. Paper manufactures and naval stores each increased about 50 per cent.; while india rubber manufactures were 2½ times as great as in 1903.

As to distribution, Europe has taken about 60 per cent. of the total exports, those in 1913 amounting to $1,500,000,000, and those to other parts of the world, something less than $1,000,000,000. To the countries of North America the exports for 1913 were $601,000,000, two-thirds of which went to Canada. The exports to South America were $147,000,000, chiefly to Argentina and Brazil. Exports to Asia were $126,000,000, of which one-half went to Japan, one-fifth to China, and the remainder to Oceania, Australia and the Philippines. Africa received $29,000,000 worth of American goods in 1913.

The methods used by American manufacturers in making exports and securing foreign business are varied and interesting. Naturally with such a stupendous increase in foreign trade as is revealed by the foregoing statistical comparisons, there must have grown up also a refined organization for the handling of this business. This is particularly true of the large corporations, but there has been an improvement also in business methods and facilities all down the line to the smaller manufacturers who are only occasional exporters. In the past there has been a great deal of criticism of American export methods and many examples of ignorance or indifference have been quoted. That such instances should occur is not at all surprising, for equally faulty business methods can easily be found in domestic trade.

Great Britain and Germany have long been held up as examples of excellent organization for handling foreign trade, but the organizations developed by some of the great American manufacturing concerns can safely hold their own in comparison with any of Europe. In fact, certain classes of manufacturers have built up a foreign business unequalled anywhere in the world—concerns, for instance, making typewriters, talking-machines and cash registers. A great deal was heard in the recent tariff discussions to the effect that American sewing-machines—for example—could be bought more cheaply abroad than at home; and the enormous profits American manufacturers were supposed to make out of this alleged discrimination against American consumers was one of the chief arguments of those who favored tariff reduction. Yet the true cause of this disparity was not discovered, for it lay in the fact that the particular company cited had developed the most intricate and far reaching system of selling and distributing ever known. Like some others, this company manufactures its machines where it can do so most cheaply, and a considerable part of the machines sold in foreign markets were not manufactured in the United States at all. Yet they were the product of American capital, initiative and organization and the profits were added to those of American industry. Agricultural implements, that formed only an occasional shipment 20 years ago, are now sent over by steamer loads in full cargo lots, while other great trade organizations, such as the steel corporation, the meat packers, and manufacturers of steam pumps, steam heating apparatus and electrical machinery, have developed a most scientific organization for handling their foreign trade. The spread of American shoe stores in Europe is but the extension abroad of policies inaugurated at home.

A direct personal acquaintance with foreign markets is not now deemed essential for the responsible heads of manufacturing concerns, but a full, intelligent comprehension of the requirements is absolutely indispensable. In fact, the head of the export department of almost any great manufacturing concern would have had to spend more time in traveling, in order to become acquainted with his field, than he could devote to the business itself, for to some of them there is hardly a country in the world that is not within their field.

But it must be remembered that there is a vast amount of

trade with foreign countries that comes from the smaller manufacturers, who may be big enough in their own fields, but who, when it comes to comparison with the giants already described, seem very small. Some manufacturers who could do so have not ventured into the foreign fields because of the belief that it required too great an extension of their organization, and others having secured some foreign business have allowed it to run itself, which, of course, has been just as unsuccessful a policy as it would be in the case of their domestic business.

The export commission houses have grown to be great helps to the American manufacturer. Every manufacturer who seeks export business at all is bound sooner or later to have relations with these exporters, and it is to his interest to have such relations. There has been a great deal of misapprehension regarding export commission houses and their province, especially by manufacturers located at some distance from New York. It has been said by those who are in a position to speak, that more than half of the entire export business of the United States today is due originally to the work and effort of export commission houses. Yet it would be surprising if into this field there had not crept numerous "fake" schemes. But this article has to do only with those of high character and standing. Export business as a whole has been up to recently, and indeed still is, such a very mysterious one to many American manufacturers, that it is by no means strange that a class of exporters devoting themselves solely to foreign relations should spring up, not always too scrupulous as to representations likely to induce profitable relations with manufacturers; but on the other hand, there are names so well known that they carry their own guarantee with them.

An export commission house, properly so-called, is really the buying agent in America for foreign merchants, whom it may persuade to entrust to it the placing of their orders for certain goods with the financing of such orders—that is, paying the manufacturers bills, and in turn collecting from the foreign merchants—and the shipping of the goods. It is easily seen how it would be to the interest of the foreign merchant to utilize the services of such a representative in American markets. A foreign merchant buying a great many different kinds of goods from various isolated manufacturers frequently finds it a convenience, no less than an economy, to forward all his orders under one cover to his American commission house, instead of writing a number of different letters to individual manufacturers and thereafter receiving a corresponding number of separate and distinct shipments, and paying for the goods in the different fashions individual manufacturers may require. Export commission houses are properly devoted to this sort of business only, and in fact many of them, by their articles of partnership or their bylaws, are prohibited from doing any business on their own account. They make their profit, or are supposed to do so, from the commission which they charge their foreign customers for attending to the details of placing orders, financing them, and collecting and forwarding the goods. This commission is usually 2½ per cent. in the case of miscellaneous goods, but sometimes it is as high as 5 per cent. in special cases, while on the other hand, when very large single purchases are made it is sometimes as low as 1 per cent. or even less. Export commission houses are not supposed to receive remuneration of any sort for their own account from the manufacturers from whom they purchase the goods. As a matter of fact one of the chief arguments used by such houses to induce new foreign accounts is the claim that because of their very large purchases in practically all lines of American goods they are enabled to procure for their clients—that is, their foreign customers—better prices and discounts than such clients could themselves obtain, and that in return for the commission they charge their clients the latter receive the benefit of every discount and commission, cash or otherwise, which the exporter is able to obtain.

With the development of export business, the functions of export commission merchants have in some cases been modified and extended. In addition to the export commission houses of the character noted above, there are others which combine with the original functions of such houses a selling organization of one sort or another. In this case, the export house either sends into foreign markets its own salesman, or maintains in one or several foreign markets its own branch offices with or without sample and salesrooms. Among the large first-class export houses in New York there exist examples of both of the classes already referred to. Some merchants of both classes confine their operations to certain parts of the world and some of them do business only in certain goods, but, generally speaking, export commission merchants are open to receive orders for any sort of American goods whatsoever from any foreign house of whose position and reputation they are assured.

Also to be included under export commission merchants are a few American houses which operate in certain foreign territories exclusively as manufacturers' agents, altho, strictly speaking, they are not commission houses in the sense generally understood. These agents take the agencies for certain manufacturers, usually limited in number and to one line of trade, and are supposed to act for them as their own salesmen and agents, usually in return for a salary and commission. Another class includes those who have of recent years opened offices in the United States, usually in New York, as the representatives of large foreign houses, handling considerable quantities of American goods. These branch establishments in America really take the place of the American export commission houses. They execute orders for American goods, which are sent to them by their foreign headquarters. They are usually successors to former commission house connections, which their principals have had, but whose business has grown to the point where it could be better conducted by personal representation.

Export houses in general handle their foreign connections as does the large export manufacturer. They do business with foreign customers, whom they know just as a manufacturer would, and as a rule extend no more liberal credit to their foreign connections than would manufacturers who have taken equal pains to investigate the standing of their customers. They enjoy an advantage, however, very often from the fact that the export house is also an import house and through the exchange of commodities, arranges finances much more conveniently than could a manufacturer. But as a rule most export houses ship goods to foreign customers, subject to draft attached to documents or against confirmed credits, just as does the prudent manufacturer. The advantage to the foreign customer is chiefly in the convenience of transmitting orders under one cover and receiving shipments on one bill of lading. It is true that export houses, through better acquaintance, are sometimes willing to allow longer term drafts than manufacturers, and because of their large business in foreign banking circles, sometimes finance such bills more readily than could an unknown manufacturer.

The advantage to be derived by the American manufacturer from doing business through export commission houses is considerable. He is relieved from the annoyance of petty details connected with shipping the goods, and has only to follow the instructions given him by the export house. He has all the usual facilities for investigating the responsibility and character of the export house in question and collecting from it precisely as he would from a customer in the United States. Furthermore, he is assured that his goods will reach his customer more economically, so far as ocean freights are concerned, than were he to ship himself, as the export house is able to command better rates than could an individual manufacturer, and in any event, through combined shipments from several manufacturers, the export house avoids excessive charges on each small shipment.

The subject of export business in general is a large one, and has only been touched on in this article. Acknowledgement is made to Mr. B. Olney Hough, editor of the "American Exporter,"

to whom the writer is indebted for valuable data, as well as to Hon. Wm. C. Redfield, secretary of the Department of Commerce, and to others.

Rubber manufacturers usually find their goods handled by export houses in much the same fashion as others, but in doing business with them they must take the pains to investigate their standing precisely as they would with any other customers. Having once satisfied themselves on this point, they can then go ahead with confidence and do their utmost to develop the new fields opened up to them.

"PAVEA" SYNTHETIC RUBBER.

Earle Bros., rubber brokers of 68 Broad street, New York, inform THE INDIA RUBBER WORLD that they are the authorized forwarding agents for F. R. Muller & Co., Limited, of England, for the sale of "Pavea" synthetic rubber.

They expect in June or July of this year to start the production of "Pavea" rubber at about 100 tons a week, but before the end of the year they hope to increase the output to about 1,000 tons a week. One interesting thing about this new synthetic rubber is that it is offered for sale at a discount of 10 per cent. from the market price of first latex crepe. To quote them exactly: "Any rubber not delivered by the time stipulated in any forward contract made will get the benefit of any fall in the market price of First Latex that may have taken place between the date of such contract and the date of actual delivery."

Earle Bros. submit an analysis of "Pavea" synthetic rubber, which is as follows:

	Per Cent.
Acetone extract resin	4.13
Rubber gum	95.70
Insoluble matter	.17
	100.

The remarkable part of this analysis is the percentage of resin in the rubber. It has always been supposed that rubber made by synthesis did not contain resin. Now would anybody after making synthetic rubber be likely to add resin? Manufacturers may not doubt the rubber at its lower price, but they are almost sure to doubt its origin.

HUNTING GUAYULE BY AUTOMOBILE.

FIRST and last many hundreds of Americans have visited the uplands of Mexico where flourishes the Guayule plant. Their mode of travel when they got away from the railroad was by stage or on horseback, as a rule.

A DITCH TO BE CROSSED.

So far as is known only one party was venturesome enough to attempt the desert journeys by automobile. This party was made up of New York magnates of the private car and ocean-going yacht variety. It was piloted by a young American from whose scrap book the accompanying illustrations are borrowed. The journey of 125 miles took four and a half days.

SIX MULES TO THE RESCUE.

The party camped by water holes at night and lived on frijoles, tortillas and game. They rode part of the way, walked much, and had an immense amount of fun. When stuck in a ravine they scoured the country on foot for mules to pull them out. When one cylinder of the automobile gave out they chugged along

LAST LAP OF THE AUTO JOURNEY.

with three. Finally when the machine gave out entirely they inspanned oxen and went right along. Of course this happened before the present Mexican muss, but it is just as interesting for all of that.

RECENT CUSTOMS RULINGS.

Duty at 47½ per cent. on the value was recently taken on cotton velvet with rubberized back imported by W. A. Walker, the Board of United States General Appraisers not sustaining his claim that it was properly dutiable as waterproof cloth.

A contention regarding corsets imported by Stern Bros. and composed of cotton and india rubber, with cotton forming the chief value, has been decided by classification of the article as cotton wearing apparel, dutiable at 50 per cent.

Duty at 10 per cent. has been levied on rubber junk of various kinds imported by several New York houses, the Board sustaining the Collector in this assessment against the protests of the importers, who claimed the merchandise fit only for remanufacture.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Rubber Cement and Some of Its Uses.

ONE of the important and constantly increasing uses of rubber is in the form of cement, and many and varied are the arts, trades and occupations in which this form of adhesive has become practically indispensable.

Rubber cement may be divided into two classes, namely: a simple solution of the gum which by the evaporation of the solvent leaves a thin layer of the rubber between the parts to be stuck together; and a compound cement, which, after being applied and the pieces stuck together, is vulcanized, and to a certain extent becomes incorporated as a part of the article so formed. The first is used very largely in the manufacture of leather goods, such as boots and shoes, bags, pocketbooks and similar articles. The compound cements are mainly used in the various rubber industries, such as waterproof clothing manufacture, the druggists' sundry business and in automobile tire work.

The manufacture of those cements used in the production of leather footwear is a comparatively simple matter. The cement is a solution of gum in naphtha, and while there is no secret in its composition, every manufacturer has his own formula as to the proportion of gum to the solvent, and also the kind and quality of the various rubbers which enter into his various grades.

Naphtha is used as the solvent in preference to gasolene or benzine, because of the higher volatility of the former, and the oiliness of the latter. Gasolene would evaporate too quickly for most purposes where the cement is used, while benzine is too heavy and holds sufficient grease to detract from the adhesiveness of the rubber.

GOODYEAR TWIN SOLE-LAYING MACHINE.

The finest qualities of rubber cement are made from Knapsack Pará, while in some grades a large proportion of Massai is used, and in the cheaper grades lower cost gums, even down to Pontianak. A cement manufacturer can furnish rubber cement at almost any figure a customer desires, the price being practically determined by the quality and quantity of the gum used. One manufacturer quotes for his best cement one dollar a gallon, but another's best sells in quantity at $1.50, while a leading rubber heel manufacturer quotes $2.50 per gallon for his best cement for attaching rubber heels to leather shoes. From these prices the scale runs down to almost any amount a customer cares to pay, some such preparations being quoted as low as thirty cents.

STAR CHANNEL CEMENTING MACHINE.

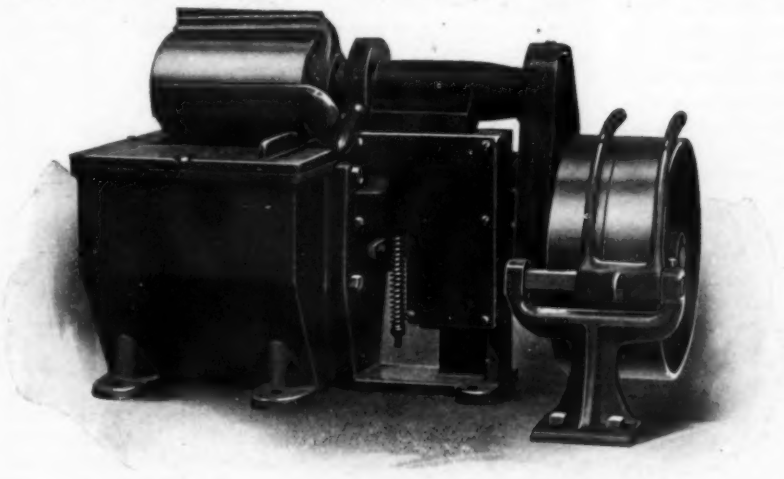
The manufacture of such cement is very simple. The crude rubber is cut in small pieces, softened by hot water, and run through the washing rolls in the usual manner, then sheeted and hung in lofts until thoroughly dry. It is then ready for dissolving in naphtha. The proper quantities of rubber and naphtha are placed in a "muddler," an iron tank having a capacity of about ten barrels. This tank has a central revolving shaft, furnished with projecting arms, while similar arms fastened to the inner surface of the tank enmesh those on the shaft and by constant stirring facilitate the solution of the gum; and a steam jacket over the lower half of the tank serves to further hasten the process. When the gum has entirely dissolved the cement is ready for drawing off into cans or other air-tight containers, for delivery to customers.

Simple as this process is, it requires care and experience, while the admixture of the various qualities of gum requires a knowledge of their individual properties and also of their prices current, where cement must be manufactured at certain prescribed prices. For many purposes such cement is entirely satisfactory, but in some of the arts it is required that it be practically colorless in order that it may not stain in any way the materials on which it is used during its application. In this case some manufacturers prepare a quality of their cement from the pure Ceylon or East Indian Pale Crêpe which makes a handsome article, not exactly clear but beautifully opalescent, and which leaves no stain upon white canvas or delicate shades of leather.

Then, there is a condition that requires a cement which

will stick together leather containing oil or grease. Everybody in the rubber trade understands the action of grease on rubber. For this purpose, therefore, the manufacturers make a special cement which holds in suspension some absorbent material like French chalk or whiting. This, while being used, must be constantly stirred, for it is otherwise likely to settle. The chalk absorbs the oil and thus allows the rubber to retain its tackiness

A very large amount of rubber cement is used in the manufacture of shoes; in fact, outside of its use in the manufacture of rubber goods, there is no industry in which it has such an extensive and general use. In bottoming the shoe it is used to fasten the outer sole until it can be stitched. Formerly many tacks were used to hold the outer sole in place, but today this is almost entirely superseded by the cement process. The insole and welt, and the outsole, are coated with cement by a machine which takes it from an air-tight tank and applies it by means of a revolving brush in the exact quantities desired. In this way an even coating is given to the different parts. Formerly, when this was done by hand, the waste through evaporation or lack of care on the part of the workman was very great. The leather is then softened, so as to make it sufficiently pliable to take the shape of the last when placed in the sole-laying machines. These machines are made in pairs, so that the workman can place sole and upper in one and let it remain until "set" while he does the same with the other. The twin machine is shown here—the writer of this article being indebted for this and for the other four illustrations to the United Shoe Machinery Co. The lasted shoe is held by the small peg at the left of the upper section and by the pad at the right. The sole with its cement very "tacky" is laid on the form shown, and the lasted shoe is pressed down, when the sole conforms to the shape of the rubber pad or mold beneath and the last above, and is firmly attached and ready for stitching. Glue would stick the sole on as well, but it would dry hard and make a stiff shoe, while rubber is pliable, possesses anti-squeak qualities, and is waterproof. The shoe is now ready to be stitched by machine.



RAPID ROTARY CEMENTING MACHINE.

Another use for rubber cement is in the channel, that little lip of leather split from the outsole, so that the stitching may be done and then covered so the sole will be smooth. The inside of this channel is coated with cement, and time, care and accuracy are secured by using the Star Channel Cementing Machine, which coats the lip with just the proper quantity and covers it exactly as needed.

After this cement has been allowed to set till it becomes sticky, the channel lip, which has previously been laid back against the sole, is again forced into its former position and held securely in place by the rubber cement. This machine, by means of brushes of different widths, may be used in other parts of the shoe where cement is required. The narrow brush for the channel may be replaced by one broad enough to coat the outsole, and the same machine may be used to fold the skived edges of upper leather to be stitched or simply held together by the strength of the cement.

GEM CEMENTER.

But for cementing soles, the Rapid Rotary cementing machine is preferable. It is a covered cement pot in which revolves a large corrugated roll by which the cement is applied. The feed roll automatically adjusts itself to any thickness of sole. Soles of any size may be given an even coating of cement of any desired thickness, while the other side is perfectly free from cement. Its capacity is 5,000 to 10,000 pieces per day, according to the skill of the operator.

This machine was formerly in demand to coat cloth, and to reinforce thin leather used in the uppers of women's shoes, but it was found that rubber cement was considered objectionable, as rubber was heating and had a tendency to "draw" the foot. Paste or other adhesives are now used for this purpose.

Mention should be made here of the fact that thousands of gallons of rubber cement have been used in the past to mix with ground cork as a "filler" in the space between the inner and outer sole of welt shoes. But when rubber soared in price a few years ago other materials were experimented upon, and as a consequence cheaper vehicles are used to hold in a paste form the cork used for this purpose.

The high price of leather and the unsatisfactory wear of inferior stock have led to the use of substitutes for this material in certain portions of shoes where costs are whittled down closely. One of these is a rubber treated canvas insole, in the manufacture of which the Gem Cementer is employed. This machine puts the cement on the canvas as it is fed through the cement pot. Strips of duck or canvas can be

IMPROVED CEMENT POT.

cut and passed through this machine, which spreads a perfectly even coat of cement on one side. These strips are then pressed together, and later cut to the shape required.

Where cementing is done by hand the volatility and inflammability of rubber cement has necessitated inventions to prevent as far as possible the thickening of the cement in the container. An improved cement pot shown has a container shaped somewhat on a spiral, and which revolves partway in a frame. When in use, the square opening presents only small surface for evaporation, and when not in use the pot is turned up till it strikes the square plate above, when a clamp seals it air-tight.

Pure india rubber, whatever its quality, will deteriorate after a while, and as the cements mentioned leave simply a layer of such rubber between the surfaces they are intended to join, such joints are likely, in time, to loosen and separate. Therefore, in the manufacture of rubber goods, which are afterwards vulcanized, other ingredients are added to allow the thin layer of cement also to be vulcanized, and thus form an actual joint of the same material and similar consistency as that from which the article is made.

Such cements are used in making soft rubber goods like hot water bottles and fountain syringe bags, and hundreds of articles of like nature; also in the rubber clothing business, where the best work is required. To be sure, coated cloth is purchased cut into shape and stuck with simple cement, but it does not wear long before the cement loses its hold and the garment is worthless. The more reliable manufacturers use a compound cement, which is vulcanized when the garment is completed.

As examples of such compound cements the following may be considered as representative:

Fine Pará	89.8	parts
White Lead	3.4	"
Litharge	6.8	"
Sulphur	4.2	"

One pound of this compound is used to a gallon of naphtha.

For rubber-surfaced coats, and for automobile tire work, the following compound has been found effective and satisfactory:

Fine Pará	24.	parts
Whiting	12.	"
Litharge	16.	"
Sulphur	1.25	"

One pound to each gallon of naphtha.

A richer cement for the same purpose is:

Fine Pará	33	parts
Litharge	6	"
Sulphur	3	"

For sole laying and channel cement a good mixture is said to be:

Fine Pará	25	parts
Congo	90	"
Lopori	90	"
Gum Thus	15	"

From ½-pound to 1 pound to the gallon of naphtha.

The Gum Thus, or common resin, is added to prevent too rapid drying, but any resinous gum is likely to "cake" on exposed parts and is hard to remove, while purer gum can be rubbed off with the fingers, when it rolls up into small rolls and peels away, where resinous cements stick tightly.

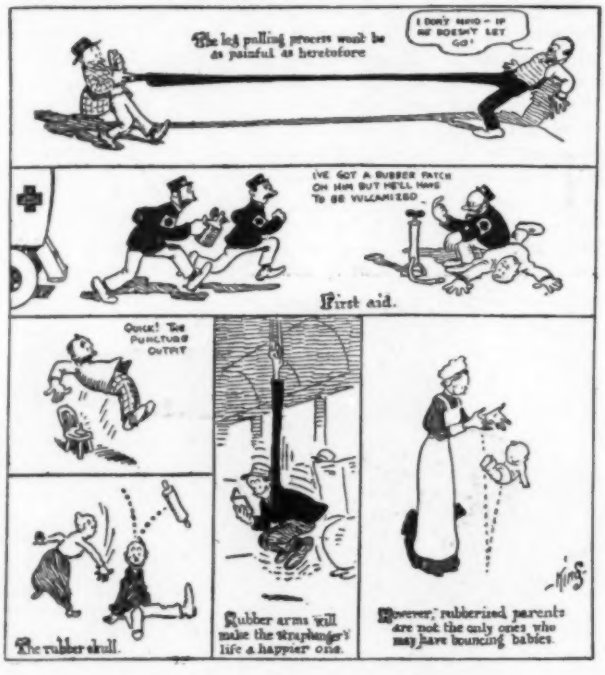
In the leather goods trade, the hat business, pocketbook making and in many lines where a strong flexible adhesive is needed, nothing fills the bill quite so satisfactorily as well made rubber cement.

A novelty for the bathing beaches has been introduced for the coming season in the form of dolls with red rubber costumes and cork stuffing.

WHEN MAN IS MADE OF RUBBER.

The alleged discovery by a Parisian surgeon that rubber can be grafted onto human beings, new organs and members made of that substance taking the place of their natural counterparts, is referred to in the editorial columns of this issue with all the seriousness that the subject seems to demand. This discovery appears to have made a strong appeal to the artist of the "Chicago Daily Tribune," who sets forth in a series of illustrations—reproduced in somewhat condensed form below—the many marked advantages that will accrue to human beings when the rubber grafting process becomes general.

A Doctor Is Grafting Rubber Into Human Beings.


The leg pulling process won't be as painful as heretofore
I DON'T MIND — IF HE DOESN'T LET GO!
I'VE GOT A RUBBER PATCH ON HIM BUT HE'LL HAVE TO BE VULCANIZED
First aid.
QUICK! THE PUNCTURE OUTFIT
The rubber skull.
Rubber arms will make the strap hanger's life a happier one.
However, rubberized parents are not the only ones who may have bouncing babies.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies onMay 20 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., Common	215	——
Ajax-Grieb Rubber Co., Preferred	99	——
Firestone Tire & Rubber Co., Common	302	307
Firestone Tire & Rubber Co., Preferred	108	110
B. F. Goodrich Co., Common	25½	26½
B. F. Goodrich Co., Preferred	89½	90½
Goodyear Tire & Rubber Co., Common	177	182
Goodyear Tire & Rubber Co., Preferred	98	100
Kelly-Springfield Tire Co., Common	51	53
Kelly-Springfield Tire Co., Preferred	132	137
Miller Rubber Co.	130	135
Portage Rubber Co., Common	——	40
Portage Rubber Co., Preferred	——	90
Rubber Goods Mfg. Co., Preferred	100	110
Swinehart Tire Co.	65	70
U. S. Rubber Co., Common	59	59¼
U. S. Rubber Co., 1st Preferred	102⅝	103

What a Trade-Mark Right Is and How to Obtain It.

THERE is an almost general misapprehension as to the real meaning of a trade-mark right. It is generally believed that the obtaining of a trade-mark *creates* the right to the exclusive use of the word, phrase, or symbol, as the case may be. That is not at all the case. The registration of a trade-mark creates no right whatever. The right to the exclusive use of the mark, if it was a right, existed before the registration and entirely distinct from it. It came entirely from the fact that the owner was the first to use it. The registration of the trade-mark simply made it easier to pursue the remedy against infringers. The owner of the mark would have had precisely the same right to its exclusive use if he had not registered it. The registration simply makes it easier to prevent other persons from infringing upon it.

Let us suppose that John Jones, a rubber manufacturer, wishes to market a line of goods under a new name. He thinks "Jupiter" a good name, and adopts that. If no one else has adopted "Jupiter" as a brand name for rubber goods before him, Mr. Jones, by the simple adoption of the name, acquires a right to it which he may defend against all other persons. In order to acquire and to enforce that right, he has no need whatever to register the mark in Washington. What he gets by registration is certain advantages in pursuing his remedy against infringers which the trade-mark laws give him, and which are explained a little further on.

The above principles are repeated and reiterated because, as already observed, there is general ignorance on the subject.

Trade-marks are registered in the Patent Office at Washington, and all communications on the subject need to be addressed to the Commissioner of Patents. The trade-mark law under which the Patent Office now operates is the act of February 20, 1905, as amended by the act of May 4, 1906. This act provides, generally speaking, that any name, phrase, mark or symbol may be adopted as a trade-mark and registered, with the following exceptions: (1) It must not consist of immoral or scandalous matter; (2) it must not consist of the flag or coat of arms of the United States or any State or foreign nation; (3) it must not consist simply of the name of an individual firm, corporation or association unless same be woven or printed in some distinctive manner; (4) it must not consist of words or devices which describe the goods, or their quality; (5) it must not be a geographical term; (6) it must not be a portrait except with the subject's attested consent.

Practically every other mark of whatever character may be adopted and registered.

The certificate of trade-mark, if granted, can be assigned to another person, but only when the good will of the business represented by the article covered by the mark is assigned also. It remains in force for twenty years only, but can be renewed. All trade-mark articles must bear the words. "Registered in U. S. Patent Office," which may be abbreviated thus: "Reg. U. S. Pat. Off."

We come now to the advantages in the way of suing an infringer which the person who registers his trade-mark obtains under the law. A summary of these advantages is as follows:

1. The holding of a certificate of trade-mark registration is considered *prima facie* evidence of ownership. That is, if not contradicted by evidence to the contrary, it will be accepted by the courts as evidence that the person holding it was the first person to adopt the mark, and therefore is in position to defend it against all other persons.

2. The act gives a right to bring an action in damages against any infringer, tho the owner would have had this right anyway under the common law. The act gives the advantage, however, of authorizing the court, where the suit is decided against the alleged infringer, to enter judgment for three times the amount of the verdict. This could not have been done in any common law action.

3. The owner of a trade-mark can sue in any circuit or territorial court of the United States, or in the Supreme Court of the District of Columbia, and the case can be appealed to any circuit court of appeal, without regard to the amount in controversy. This opens the United States courts to him, with the advantage of being able to get service upon the defendant without difficulty.

4. The above courts can grant injunctions against an alleged infringer of a trade-mark, and a verdict will lie against him at the trial of the case for all profits he has made out of the illegal use of the trade-mark, also for all damages the plaintiff has sustained. These damages can be increased to three times the actual amount, by way of penalty against the infringer. At the trial of the case the plaintiff is required to prove only the sales of the defendant under the illegal trade-mark.

5. The court may also order the destruction of all labels, signs, prints, packages, wrappers or receptacles which bear an infringing trade-mark.

6. An injunction granted under the act may be served upon and enforced against any infringer wherever he may be found.

In applying for the registration of a trade-mark, three forms are used: One known as the petition, the second as the statement, the third as the declaration. Following is a proper set of forms where the applicant is an individual. Where a partnership or a corporation applies, the forms must be altered to suit:

(1) PETITION

To the Commissioner of Patents:

The undersigned presents herewith a drawing and five specimens of his trade-mark, and requests that the same, together with the accompanying statement and declaration, may be registered in the United States Patent Office in accordance with the law in such cases made and provided.

JOHN JONES.

Dated June 1, 1914.

(2) STATEMENT.

To all whom it may concern:—

Be it known that I, John Jones, a citizen of the United States of America, residing at Philadelphia, county of Philadelphia, State of Pennsylvania, and doing business at No. 1300 Chestnut street, in said city, have adopted for my use the trade-mark shown in the accompanying drawing, the triangle being printed in red, for rubber heels, in class —.

The trade-mark has been continuously used in my business since January 1, 1912.

The trade-mark is applied or affixed to the goods, or to the packages containing the same, by placing thereon a printed label on which the trade-mark is shown.

JOHN JONES.

(3) DECLARATION.

State of Pennsylvania, } ss.
County of Philadelphia, }

John Jones, being duly sworn, deposes and says that he is the applicant named in the foregoing statement; that he believes the foregoing statement is true; that he believes himself to be the owner of the trade-mark sought to be registered; that no other person, firm, corporation or association, to the best of his knowledge and belief, has the right to use said trade-mark, either in the identical form or in any such near resemblance thereto as might be calculated to deceive; that said trade-mark is used by him in commerce among the several States of the United States; that the drawing presented truly represents the trade-mark sought to be registered; and

that the specimens show the trade-mark as actually used upon the goods.

JOHN JONES.

Subscribed and sworn to before me, a notary public, this 1st day of June, 1914.

RICHARD DOE.
L. S. Notary Public.

If color is not an important part of the mark, no description of it in the statement is necessary.

In explanation of the use of the designation "Class —" in the statement, it should be stated that the Patent Office divides all merchandise into classes, and the class to which the goods covered by the trade-mark belong must be stated.

The fee for obtaining a trade-mark is now $10, which should be sent by money order or certified check to the order of the Commissioner of Patents.

(*Copyright, by Elton J. Buckley.*)

FIGHTING FIRE ON THE GREAT LINERS.

THE vital importance of efficient means of fighting fire on shipboard has been brought to the attention of the public with great frequency of late, by reason of many terrible sea disasters. Here is an illustration of an apparatus which is being installed on some of the largest transatlantic liners. It consists of a helmet, with cape coming well down over the wearer's shoulders, to which is attached a rubber hose, on the other end of which there is a bellows, worked by an assistant outside. This bellows supplies the fire fighter in the smoke-filled room with pure air. In addition, there is a second pipe which serves as a speaking tube, so that there can be direct and instant communi-

SMOKE HELMET AND EQUIPMENT FOR FIGHTING FIRE ON STEAMERS.

cation. Then there is a third means of communication—not rubber, but eminently desirable in this sort of work—viz., a rope that is tied around the fighter's waist, by which if he becomes disabled he can be pulled back to safety.

The second picture shows the fire detector and extinguisher apparatus installed on the S. S. "Imperator." This equipment consists of a set of pipes, shown in the cabinet in the photograph, one of which is connected with each of the compartments of the hold. The cabinet contains an electric suction fan in the enclosed part at the top. This fan is always in motion, drawing a column of air through each of the pipes and exhausting it through the large pipe leading up to the ceiling. If a fire gets started in any part of the ship the fan will soon draw the smoke up through the particular pipe leading to that compartment and as this outfit is located on the bridge of the ship, the officer in command has it constantly under his observation. As soon as smoke is seen arising from any pipe, the doors are opened and the air shut off and

FIRE DETECTOR AND EXTINGUISHER.

the heavy steam hose which the sailor is holding is screwed down in connection with that particular pipe. This hose is connected with the steam pipes from the engine room and it takes only a few moments to fill any section of the ship's hold with live steam under heavy pressure. The steam acts as an excellent fire extinguisher and does much less damage to the cargo than water.

RUBBER IN CELLULOID MANUFACTURE.

In making various celluloid articles, such as simple cane and umbrella handles that are only to be enlarged, a soft rubber core is used. It is placed inside the celluloid tube, which is steeped in boiling water and the hot water expands the rubber core, thereby enlarging the tube. The rubber core is then withdrawn and the tube placed in the mold. An enlarged celluloid tube open at both ends is thus formed.

Certain hollow objects are made by introducing a rubber core into a hollow block. By heating and pressure, the celluloid is molded on this core, which is afterwards withdrawn. Handles of sticks and umbrellas imitating thorn are made in this way.

In the manufacture of celluloid umbrella or cane handles, which are bent or twisted, a rubber core is used. The core is of soft subber, spiral in form and introduced into a tube of celluloid, the whole placed in boiling water. The rubber core expands by the action of the hot water and the celluloid tube softens and assumes the shape of the rubber core. While in a plastic state, the celluloid is bent or twisted into the desired form. After a short time has elapsed, the celluloid is cooled sufficiently and the rubber core is withdrawn. The celluloid then becomes rigid and retains its shape. The rubber core being elastic expands lengthwise, while its diameter contracts under a stretching force and it is therefore easily withdrawn.

THE CLOSE CONNECTION BETWEEN COTTON AND RUBBER.

By Edwin H. Marble.

A VERY suggestive incident which occurred at the rubber exposition held in New York would furnish a text for a many-page article. Approaching one of the exhibits, a gentleman took a piece of cotton cloth in his hands and asked rather sarcastically, "That's common cotton cloth, isn't it?" Informed that his premise was correct, his next remark opened up a very exhaustive subject. "Now, what's a piece of cotton cloth got to do with the rubber trade?" It is my intention to answer this question in a somewhat more serious manner than the questioner expected. Broadly speaking, the piece of cloth is the means by which the rubber, in many of its manufactured forms, is put into usable condition. In the raincoat it carries the rubber surfacing to the wearer's back; in the overshoe it puts wearing qualities into that article, and in the tire, it is the bond which unites the rubber surfaces and adds durability and life to the combination.

When the importance of this medium is considered we can see how essential it is that this fabric should be properly selected for the particular use to which it is to be applied, properly prepared for the application of the rubber, and properly combined and united with the other element that enters into the manufactured form.

First its selection. The use to which it is to be applied and the processes thru which it passes during that application are both to be considered. While the fabric is manufactured it must receive certain well defined courses of selection and treatment. The fibre which enters into its composition—Upland, Midland, Sea Island, Egyptian—each has well known characteristics that best fit each staple to a particular class of goods, and once selected this fibre must be handled by the cotton manufacturer to produce a yarn of suitable size and strength to meet the requirements. This yarn must then be organized into a fabric, according to a well defined plan. Now when we use the term "well defined plan" we mean a plan which will produce a fabric suitable for the requirements of the rubber manufacturer; and these requirements are of a widely varied nature. The shoe drill, the wrapper or liner cloth, the cotton backing for hospital sheeting and the fabric for the automobile tire, each requires a planned organization.

Taking the last item as an example we find a strength test necessary to satisfy our requirements. An openness of structure to allow the rubber to properly rivet or friction the pieces of fabric together is a second requirement, and an inter-laying of the warp and filling strands that shall give a uniform elongation along longitudinal and transverse lines of pull, is a third requirement. Any of the other fabrics may be examined in a similar manner. A most important point to consider at this time is when the rubber man shall decide whether the fabric fulfils the requirements. It sometimes happens that a fabric has been tested at the wrong time. A fabric when received from the seller may show a strength test above requirements, and yet when subjected to the processes incidental to manufacture, it may have lost part of its strength and be condemned as unfitted for its purpose. The specifications should state when and how this strength test should be applied, and the manufacturer of the fabric be asked to cooperate with the rubber man in obtaining the proper strength under the proper test.

And don't expect too much of the fabric. A certain sized yarn organized into a certain fabric under certain fixed conditions of moisture will satisfy a certain test, and the variations in different testing will be slight.

Now as to the equal elongation of warp and filling. If the piece as received is correct in this particular, how about the rubber man's subjecting the narrow strip of this fabric to an abnormal pull in a particular direction—extending the threads along one line to their fullest straining point, while little strain is applied in an opposite direction? Is this a fair method of treatment? Is it not unfair alike to the cotton manufacturer, the tire manufacturer and the innocent victim—the automobile owner who pays many of the unfair bills? A closer acquaintance between the two first mentioned will produce a much pleasanter acquaintance between the two latter.

The other requirement noted is the particular openness of structure required to allow the rubber to properly friction the pieces together. This is largely a matter of individual decision and must be to a great extent a matter of experimental tests at the rubber factory. In this, as in the other considered points, a mutual co-operation between the parties interested will aid in determining just what is best to do in each particular case.

We have dealt quite fully with the tire fabric, as it seemingly is the most important of all the cotton fabrics made, and at the same time there seems to be less understanding of its particular requirements and of the causes of its failures than should be the case. The steel manufacturer is taken into the confidence of the user, who requires a product just suited to his needs, and their combined efforts have given this country a commanding position in that industry. Similar results can be accomplished in the tire industry. In fact we have already made fast strides in this branch of our manufactures from the rather crude product of only a few years ago.

The proper preparation of the fabric—what does this mean? Simply this: the two elements that seem to be most detrimental to the rubber coating of fabrics are dirt and moisture. The first can be largely eliminated by mechanical means, clearing the fabric of the loose or partially loosened foreign matter. In some particular cases even the projecting fibers should be sheared off or otherwise removed; while it is necessary in some classes of coated goods to force through or rivet into the cloth the projections or spurs of rubber to obtain a proper adhesion of the two materials. In others a close enough adhesion is obtained by cementing the rubber to the face of the fabric; or again a thin application of rubber unites the two layers of a piece of double texture goods.

In the one case the fabric must be thoroughly cleared of any substance that prevents a proper adhesion, and in the other case the openings or meshes must be thoroughly cleared to allow the rubber to penetrate into these openings. Those processes are almost entirely mechanical and suitable machines can be secured.

The third consideration, the proper combining of the fabric and the rubber, is a rubber proposition and outside the limit of this article. Enough has been said, we believe, to satisfy any of those interested that the piece of cotton cloth has considerable to do with the best showing that rubber in many forms can make.

NIAGARA FALLS TO HAVE A RUBBER INDUSTRY.

The Santo Rubber Co., incorporated December 24, 1913, under the laws of Delaware, purchased early in February of this year five acres of ground at Niagara Falls, New York, for a factory site. It is the intention of the company to have its plant built, machinery installed and to be ready for business by January, 1915; and architects have been preparing plans and specifications to be submitted to contractors for bids on the construction work. E. T. Brockman is president of the company and its executive offices are located in the Oliver building, Pittsburgh.

SLOW OPERATION OF RAW COTTON MACHINERY.

It has been pointed out on competent authority that the ginning of cotton is not now so well done as it was by the original machine of Eli Whitney 110 years ago, owing to the forced rapidity of the saws which cut the fibers. Baling cotton remains as it was at the close of the war of 1812, with the exception of the compress and the use of iron bands in place of ropes. Notwithstanding the many desirable improvements in both the ginning and compressing of cotton, the relatively slow operation of the gins and the enterprise required for installing and managing the slow hydraulic compresses at the plantation have retarded their commercial introduction.

Cultivation of Rubber on the Malayan Peninsula.

THE development of the rubber industry is without a parallel in the history of tropical agriculture, its only precedent, that of quinine, having been carried out on a much smaller scale.

Up to the year 1898 all the rubber handled in commerce was extracted from the trees or vines of tropical forests, principally in South America and Africa, being collected by the natives for shipment to Europe.

Altho at first the idea of cultivating rubber was generally ridiculed, the industry has achieved a marked success within a dozen years, having attracted capital to the extent of more than $250,000,000. During that time immense areas of forest have been converted into flourishing plantations, affording employment to a large number of Europeans, Javanese, Tamils and Chinese, in clearing and planting the soil and preparing the rubber. This great development has not only led to notable progress in the science of tropical agriculture, but has brought into prominence a part of the British Empire heretofore but little known—the English possessions bordering on the Strait of Malacca.

Mr. H. N. Ridley, who was Director of Gardens and Forests in the Straits Settlements from 1888 to 1911, has recently contributed a comprehensive review of the rubber plantation industry to the columns of "La Hacienda." Quite a little of the ground covered by Mr. Ridley is familiar to the readers of this publication, but even so it seems worth while to give a brief digest of this interesting contribution. He refers to the fact that the first Spanish invaders of South America early became acquainted with the uses to which the natives were putting the gum from the rubber tree, and he also refers to the well known fact that the first general mention made of rubber in England referred to its possible use for erasing pencil marks, a matter brought to public attention by Priestley.

Courtesy of La Hacienda, Buffalo.

TREES SHOWING SPIRAL SYSTEM OF TAPPING, MALAYAN PENINSULA.

At that time stationers retailed it for 7s. 6d. ($1.82) per cubic inch. Its first use in connection with clothing dates from 1820, when Thomas Hancock took out his first patent for that purpose, to be followed by Macintosh and Goodyear. Since then improvements have rapidly been made in the utilization of rubber, which now ranks among the most important and valuable of the world's vegetable products.

Concurrently with this demand, the sources of supply were thoroughly investigated, and over 100 plants were discovered which produced more or less valuable grades of rubber, including:

SOUTH AMERICA.—*Hevea, Castilloa,* Ceara (*Manihot*) and Mangabeira (*Hancornia*).

AFRICA.—*Landolphia* and *Funtumia.*

ASIA.—*Ficus elastica, Willoughbeia, Urceola* and vines of less value.

PROSPECT OF DEARER RUBBER.

For many years the natives penetrated the forests and collected the rubber wherever it was to be found, in most cases destroying the trees or vines. This method, by increasing the expense of collection, rendered the business unprofitable, so that there was a prospect of the price of rubber advancing to a point which would preclude its use for ordinary purposes. Hence, Sir Joseph Hooker, Director of the Kew Botanic Gardens, induced the British government in 1873 to send an expedition under Mr. James Collins to Amazonia after seeds. From the few hundred seeds thus obtained, a dozen plants were raised, which were sent to Calcutta, but all died, being unable to withstand the climate. In 1876 Mr. H. A. Wickham was sent to Amazonia to make another attempt, and succeeded in procuring 70,000 seeds, which were transmitted from Kew to India and Ceylon, and from which some 2,800 plants were obtained.

It was then decided to utilize the Ceylon Botanic Gardens at Peradeniya as a nursery for the plants, from which they could be transferred to the various British colonies which afforded prospects of successful cultivation. At that time a case of plants was sent to the Singapore gardens, then recently established, but it having been accidently destroyed, a second lot of 22 trees was sent, and was planted in 1877 with good results, part of them being sent to Perak, Malay Peninsula, where they were planted. It is thought that one of these trees is the largest on record in girth. From these few trees has developed the plantation rubber industry in all countries. The Singapore trees reached maturity in 1881, when seeds were sent to Borneo and elsewhere, and more than a thousand trees were planted in forest form in the Singapore gardens. Progress was also being made in Ceylon, at the Peradeniya gardens, but on a lesser scale.

In 1888 Mr. Ridley was appointed director of the Singapore Botanical Gardens, and commenced the experimental tapping of the Pará rubber trees, samples being displayed in local exhibitions, and distributed among those interested. Specimens sent to London in 1891 were considered of good quality, and in 1899 some sheet rubber from the Perak trees sold in London at 3s. 10d. (93.25 cents) per pound. This was the first cultivated

Pará rubber sold in the markets of Europe. Nevertheless, it was difficult to interest land owners in the future of rubber cultivation. The discovery of extensive areas in Africa producing *Landolphia* and *Funtumia* kept down the price of rubber, but it was evident that the destruction of *Landolphia* in Africa, and the signs of reduction in the Amazonian yield indicated the prospective insufficiency of wild rubber to meet the requirements of the market, which the increased use of rubber tires was developing. Still, the land owners of the Malay peninsula devoted themselves to planting coffee, it being apparently impossible to interest them on more than an experimental scale in the future of the rubber industry.

Courtesy of La Hacienda, Buffalo.

A WELL KEPT RUBBER PLANTATION, MALAYAN PENINSULA.

DEVELOPMENT OF RUBBER.

Finally, the fall in the value of coffee and the advance in the price of rubber (due to the growth of the automobile industry in 1898), attracted the attention of landowners, and in a few years an activity of an unprecedented character was displayed in the cultivation of rubber. In Ceylon a certain number of magnificent trees at Heneratgoda furnished seeds both for the requirements of the island and for export to other colonies, particularly to the Federated Malay States, tho the old trees in Perak furnished a supply of seeds for that state. The first important areas opened to the new cultivation were in Selangor, near Port Swettenham. On both sides of the railway between that port and Kuala Lumpur (the capital) coffee rapidly disappeared, and was replaced by Pará rubber. The forests vanished, and many districts of the peninsula, which had previously been scarcely visited by the white man, became the home of flourishing rubber plantations. Roads and railways increased, new populations were formed, labor was imported from nations of workers, Europeans were urged to act as directors and assistants, and both commerce and wealth increased.

OTHER TROPICAL COUNTRIES.

This activity rapidly extended to other parts of the tropics, seeds and plants being distributed among the various botanical gardens, especially those in the British colonies. More than 10,000,000 seeds and plants have been distributed from the Singapore gardens alone, and likewise a large number from Ceylon. Among the points to which seeds have been sent from the English possessions in Malaya and Ceylon are:

Africa.—Liberia, Nigeria, Uganda and Seychelles Islands.

Asia.—Burma, Assam, Southern India, Sumatra, Borneo, Java, Christmas Island, New Guinea, China, Cochin China, Japan, and Siam.

Australia.—Fiji, Samoa.

America.—Guiana, Honduras, West Indies.

In some cases the attempt has been a failure, but in the greater number important rubber plantations have been developed, this enormous industry having arisen from 22 plants sent to Singapore in 1877, and from 2,000 sent to Ceylon, of which only 70 were alive in 1899. No record exists of any subsequent importation of plants from Amazonia. Neither has cultivation reached its limit, there being still immense areas at both sides of the railway which traverses the Malay peninsula, destined to be covered with this valuable tree. Nor should Pará rubber alone claim the attention of investors, which should also be directed to the other kinds to which reference has been made. It is true, however, that none of them has attained the same commercial importance as Pará rubber, in rapidity of development, value of product, and the facility with which it is prepared. Practically none of them has developed well in the East Indies, altho Ceara has been grown with more or less success in the mountainous regions of Java and in Southern India.

Ficus elastica was long cultivated in Sumatra, but on account of the irregularity of its production has proved to be unsatisfactory. On the first tapping it gives a considerable quantity of latex, and less the second time, gradually diminishing the yield until it ceases. It then needs a rest of several years before producing more rubber. This peculiarity, Mr. Ridley remarks, has led to the disappearance of its cultivation in the East. To use his own words:

"Practically the great future of rubber is in the cultivation of *Hevea Brasiliensis*, which produces not only more and better rubber, but is easier to cultivate, and sooner attains the right dimensions for tapping. No doubt, for some time at least, part of the rubber of commerce will be derived from wild sources. . . . But none of these other rubbers has the value of Pará, nor can they take its place."

With regard to wild Amazonian rubber, the opinion is expressed that the expense of its production and transport will necessarily limit its yield. On the other hand, good plantations of Pará can produce it at a price leaving a fair profit, altho the latter may be less than what is paid the collectors in Amazonia for collection and carriage to the nearest port. Plantation rubber has the advantage of being cleaner than wild rubber, and of being more readily brought into the shape required by the manufacturer by the help of machinery, which cannot be used in the forest.

ADVANTAGES OF THE MALAYAN PENINSULA.

After comparing the success of plantation rubber in other parts of the world, Mr. Ridley remarks that the best results have been obtained in the Malayan peninsula, where there is an extensive area of alluvial plain with a steady rainfall through

the year, and a high, tho not an excessive high, temperature. The development of rubber trees is rapid, while the latex is abundant and rich in rubber.

Pará rubber also grows well in Ceylon, but its progress is not so rapid, and the area available for cultivation is not as extensive as in the Malay peninsula. Java, Sumatra and Borneo have plantations which are rapidly extending, but at a somewhat slower rate, at least in Java. Plantations on these islands being relatively new, comparatively little rubber from those sources has come into the market. In the south of Indo-China the French have some plantations of Pará rubber, but the opinion is expressed that it is as yet too early to estimate the prospective importance of the supply from this quarter.

In the concluding chapters of his article Mr. Ridley deals with practical questions of cultivation and preparation from the light of his personal experience.

CEYLON CHAMBER OF COMMERCE.

ONE of the principal matters recorded in the report of the Ceylon Chamber of Commerce for the second half of the year 1913 is the approval by government of the island being represented at the approaching London Rubber Exhibition. This approval was accompanied by an offer to contribute a sum equal to that collected from other sources, up to $8,333. The adequate representation of the colony is being actively promoted by a joint committee of the Chamber of Commerce and the Ceylon Planters' Association, with a view to impressing upon consumers the merits of plantation rubber.

According to the statistics of the Chamber of Commerce the total rubber export for 1913 was distributed as follows: United Kingdom, 15,841,126 pounds; America, 6,417,236 pounds; Belgium, 4,214,736 pounds; Australia, 462,473 pounds; Germany, 417,946 pounds; Japan, 312,868 pounds; all other countries, 366,960 pounds; total, 28,033,345 pounds. Ceylon produce represented 25,433,551 pounds, the balance having been imported from the Straits and India for reshipment. As compared with 1912 this result shows an increased export of Ceylon produce amounting to 10,452,476 pounds for 1913.

That Ceylon intends to encourage the transit trade in rubber is shown by an official statement to the effect that the export duty of 75 cents per 100 pounds would be levied only upon Ceylon grown rubber, and not upon that imported. This export duty was to go into effect on January 1, 1914.

The amount of rubber offered at the local auctions has steadily increased during the last three years, the quantities having been—

1911,	2,432,859	pounds; average per pound,	Rs. 2.86	(95 cents)
1912,	6,260,026	" " "	2.75	(92 ")
1913,	12,013,824	" " "	1.92	(64 ")

At the opening of 1913 first quality crepe sold at Rs. 3.20 ($1.07) per pound, selling in September at Rs. 1.42½ (47 cents), and recovering by the end of the year to Rs. 1.52½ (51 cents). Diamond smoked sheets have commanded a premium equaling 2 to 5 cents over the price of first quality crepe.

At the general meeting of August last William Moir, the chairman, commented on the Ceylon rubber exports doubling themselves each year, the majority of rubber estates being able to compete successfully in cost of production with any other rubber producing country in the world. In these conditions he considered lies the soundness and strength of Ceylon's position as to the article.

He referred also to possible improvements in the method of distributing rubber at Colombo, and to the measures in force for the prevention of rubber thefts, by the co-operation of local dealers with the authorities.

In the appendix a quantity of correspondence is quoted on various subjects as to which the chamber has been actively interested.

NEW USES FOR PLANTATION RUBBER.

Among the newest rubber floorings in London is that laid at the offices of the Rubber Growers' Association, 38 Eastcheap, which is identical with that being put down at Guy's Hospital, the Children's Hospital (both in London), and the Edinburgh Royal Infirmary. In addition to being noiseless, rubber flooring has undoubted hygienic advantages and great durability.

The Rubber Growers' Association intends to present a rubber flooring to one or more London churches, and also hot water bottles to certain hospitals. Organized trials are likewise under consideration of rubber-faced wood blocks for street paving and rubber covering for concrete or cement lawn tennis courts for indoor play. It is thought that in this way large quantities of rubber might ultimately be used.

A London correspondent of the "Ceylon Observer" calls attention to the satisfaction given by the rubber flooring at Lloyds' Underwriting Rooms and other offices in the English metropolis, adding: "I think something might now be done in the way of making rubber floor-cloth, similar to linoleum or the old-fashioned wax cloth of our youth, which could be laid down and lifted up easily, without damaging it. This would be a great and quiet boon in vestibules or long corridors, and would last much longer than linoleum—always supposing that it was made of good rubber and not of second-hand or adulterated stuff."

The floor of the underwriting rooms at Lloyds' in London is now being covered with a composition of rubber guaranteed to last 20 years. It has the appearance of large paving-stones, but the incessant tramping of feet over it produces scarcely a sound.

MR. ARTHUR LAMPARD'S VIEWS ON RUBBER.

Presiding at the recent annual meeting of the London Asiatic Rubber and Produce Co., Mr. Arthur Lampard reported a crop for 1913 of 1,006,736 pounds, against 706,945 pounds for 1912. The inclusive cost for the earlier year had been 1s. 10.27d. (45.11 cents), which had been reduced in 1913 to 1s. 7.57d. (39.55 cents). The gross price obtained for rubber in 1913 was 2s. 10.23d. (69.41 cents) per pound against 4s. 3.17 d. (103.83 cents) in the previous year.

With the view of reducing cost, they had lowered wages and thus lost a certain proportion of the force, but only in the Chinese section. The Indian contingent had been increased and they were looking forward to the practically exclusive employment of Indian labor.

He considered the statistical position of rubber was satisfactory, deliveries keeping pace with production. The shipment of a large quantity to America showed that manufacturers in that market were appreciating the advantages of plantation rubber. He added that the leading rubber goods manufacturers of the world now relied on plantation rubber more than on any other raw material.

In conclusion Mr. Lampard said he thought the fall in rubber had prevented the flotation of wild-cat rubber plantation companies. Moreover it had facilitated the introduction of economies, would increase the consumption of rubber and would kill the wild rubber industry. Statistics showed that the London receipts of wild rubber for the first quarter of the present year were only one-half of those a year ago. The policy of selling rubber for forward delivery he maintained to be sound, and calculated to develop the use of the plantation product.

TREATING LATEX IN LONDON.

The "Financial Times" of London states that a concern, known as the Robinson Securities Syndicate, Ltd., proposes to bring latex direct from the forest trees to the London manufactory, to be scientifically treated, so as to secure an evenness of grade. It is said that the transport of the latex to London in its natural state is a revelation, while the rubber already produced from such latex is reported to be of excellent quality.

WHAT THE RUBBER CHEMISTS ARE DOING.

[Extracts from recent articles on the Chemistry of Rubber which have appeared in some of the foreign publications.]

JELUTONG AND THE METHODS FOR SEPARATING ITS RESINS.

IN "Le Caoutchouc et la Guttapercha," No. 114, G. Noyer makes a contribution on "Jelutong and the Methods for the Separation of Its Resins." According to Dubosc, a previous investigator of this subject, treating crude Jelutong with acetone and ether, a product is obtained which after repeated crystallization can be shown to consist of two substances. These substances differ (1) in their melting points, which are respectively 80 degs. and 105 degs. C.; (2) in their boiling points, which are 255 degs. and 280 degs. C.; (3) in their solubility in acetone and chloral; (4) in their reaction with nitric acid; (5) in their reaction with sulphuric acid. These resins are completely unsaponifiable and produce a high optical rotation. The author believes that there is a simple relationship between Cholesterin and the purified Jelutong resins. The latter he regards as isomers of Phytosterin or Plant-Cholesterin. Cholesterin gives a characteristic reaction with propionic anhydride, the so-called Cloez reaction. By the action of this reagent on Cholesterin, a blue color is obtained which turns green, orange and finally red. On treating a sample of Jelutong resin, which has been purified by successive recrystallizations, with propionic anhydride on the reflux condenser, the mass first of all becomes blue, subsequently turns green, then orange and finally red. With acetic anhydride a violet color is obtained which subsequently turns black. The resulting resin propionate has a melting point between 98 degs. and 100 degs. C. Cholesterin propionate melts at 98 degs. C. The resin acetate melts at 110 degs. to 112 degs. C. Cholesterin acetate melts at 113 degs. C. The resin acetate, just as the Cholesterin acetate, is saponifiable with boiling water, in the former case, the original resin with correct optical rotation being obtained.

Furthermore, the reactions of Jelutong resin with sulphuric acid are analogous to those of Cholesterin. As a result of these and further analogies between Cholesterin and Jelutong resin, the author suggests a method of separation of the resin from the rubber which is based on the well known properties of Cholesterin with oxidizing agents. Potassium permanganate, chromic acid, and sulphuric acid oxidize Cholesterin to acids which are soluble in ammonia. Accordingly it is suggested to take Jelutong and boil for three or four hours with one of the above oxidizing agents. The resin is converted into Cholesterin acid, which is easily separated from the rubber by means of ammonia. The physical properties of the residual rubber are claimed to be equal to those of the rubber obtained by acetone extraction.

If crude Jelutong is fractionally extracted with acetone in a Soxhlet extractor, three distinct products can be isolated, melting respectively at 141 degs. C., 115 degs. C. and 103 degs. C. A mixture of equal parts of these resins melts at 82 degs. C. These three bodies are isomers, their chemical composition being in accordance with the formula $C_{26}H_{44}O$.

MR. DITMAR'S EXPERIMENTS WITH RUBBER SUBSTITUTES.

In the "Gummi Zeitung," Vol. 28, page 998, R. Ditmar publishes an investigation on Factis (rubber substitute). The author describes an apparatus for measuring the elasticity of substitute, the principle of which is as follows: A small cylindrical vessel is charged with the pulverized substitute. A closely fitting metal plate is then inserted into the cylinder so that it lies on top of the substitute. The plate is connected by means of a vertical rod with a second horizontal plate, which latter faces a scale. On this top plate a given weight is put, the compression of the substitute being noted on the scale. The weight is then released and the return again noted. This return is regarded as being proportionate with the elasticity.

The author carried out a very large number of experiments for the purpose of determining the nature of the products obtained by varying the amount of sulphur, the length of the period of heating, the state of oxidation of the vegetable oil, and the addition of paraffin wax and mineral oil.

Considering nonoxidized rape seed oil and sulphur, it was found that a product containing 32 per cent. sulphur on the weight of the oil gave the most desirable substitute. If oxidized oil is used, it was found that equally good results can be obtained by using much less sulphur, only about 22 per cent. being necessary to give a very good product. The rape seed oil is oxidized by blowing air through the oil for a period of five hours, the oil being heated to 250 degs. C. For the purpose of studying the action of mineral oil on substitute the author worked with a mixture containing 100 parts nonoxidized oil, 26 parts of sulphur, and mineral oil in proportions from 5 to 10 parts. The samples when freshly prepared did not look very favorable, but on standing for several weeks the products had become sufficiently hard to be available for general manufacturing purposes. Using oxidized oil on the contrary, it was found that the addition of mineral oil in amounts in the neighborhood of 5 per cent. yielded products which were sufficiently firm, even immediately after manufacture, to be available for manufacturing purposes.

Another series of experiments was carried out using 28 parts of sulphur for 100 parts of oil, and it was again found that in the case of the oxidized oil it was possible to add a larger amount of mineral oil than when nonoxidized oil was used.

The author finally studied the addition of paraffin wax to substitute made from oxidized and nonoxidized rape seed oil. In this case it was found that the amount of sulphur added to the oil was a determining factor as to whether the addition of paraffin gave satisfactory results or not. Using 24 per cent. of sulphur on the weight of the nonoxidized oil, as much as 15 per cent. paraffin was found to give a satisfactory substitute, whereas in the case of the oxidized oil this proportion of paraffin was found to be exceedingly unsatisfactory. On the other hand, using 26 per cent. sulphur on the weight of the nonoxidized oil with the addition of 5 per cent. paraffin wax, there resulted very unsatisfactory products, whereas the oxidized oil in this case, even with 10 per cent. paraffin wax, gave fairly good results. Similar anomalies were noted in two other series of experiments using 28 per cent. sulphur and 30 per cent. sulphur on the weight of the oil.

The author also carried out analyses on many of the substitutes which he prepared, determining the loss of sulphur owing to volatilization in the heating process, the total sulphur in the substitute, the free sulphur and also the free oil. It was found that the volatilization of the sulphur was uniformly greater in the case of the nonoxidized oils than in the case of the oxidized oils. This is attributed to the higher viscosity of the oxidized oils. The substitutes manufactured from the nonoxidized oils had higher free oil and free sulphur contents than those products manufactured from the oxidized oils. From the nature of an oxidized oil, one would expect just the reverse to be true regarding the free sulphur content. It is supposed that the oxidation of an oil results in the addition of oxygen to some of the unsaturated double bonds present in the oil. An oxidized oil, therefore, is more saturated than nonoxidized oil and one would therefore expect it to be less capable of adding sulphur. But just the reverse is found to be true.

VARIOUS SYNTHETIC RUBBER PATENTS.

British Patent No. 21,173, 1912, has been granted D. Spence, A. P. Clark and the Diamond Rubber Co. for "Improvements

Relating to the Production of Rubber-like Substances."

The invention consists in converting, by simple means, alcohols of certain types into substances having all the characteristics of natural rubber. It is found that alcohols yielding, by dehydration, hydrocarbons of the type

$$>C=C-C=C<$$
$$\quad\;|\quad\;|$$

where the free valences are saturated by hydrogen or by any hydrocarbon complex, can be readily converted into rubber-like compounds. The conversion of the alcohols into hydrocarbons of the above type is in some cases effected merely by the application of a suitable temperature, though preferably by means of substances which individually or together effect dehydration and polymerization. Such substances are glacial acetic acid, acetic anhydride, anhydrous acid, potassium sulphate and formic acid.

A series of U. S. Patents, No. 1,084,333 to No. 1,084,338, inclusive, has been issued to Fritz Hofmann and others, assignors to Farbenfabriken vorm. Friedr. Bayer & Co. Patent 1,084,333 discloses a process for producing a caoutchouc-like substance by the polymerization of alpha-methylbutadiene:

$$\begin{matrix}H\\ \\ CH_3\end{matrix}\!\!>C=CH-CH=CH_2$$

The polymerization may be effected merely by the application of heat or by the addition of such substances as acetic acid, acetic anhydride, butyric acid or creosote.

The remaining patents claim as new substances the vulcanized products obtained by vulcanizing certain polymerized hydrocarbons having the properties of caoutchouc-like substances. The hydrocarbons polymerized are isoprene, erythrene, erythrene derivatives, alpha-methylbutadiene and mixtures of these hydrocarbons. The patents claim as new substances the products obtained by vulcanizing these polymerized hydrocarbons either with sulphur chloride or with sulphur.

THE ORIGIN OF THE WOOL BOOT.

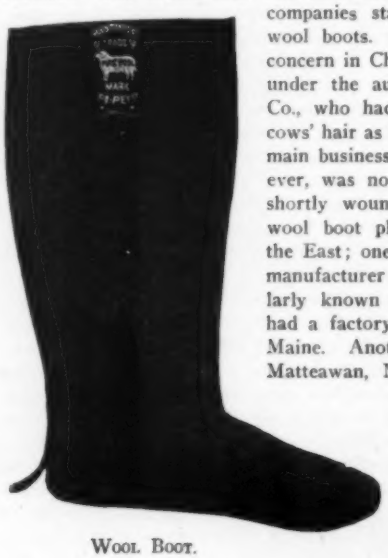
ONE of the pioneers in rubber footwear, who is a modest man and specifies that he be made the subject of no personal reference, gives the following very interesting history of the birth of the wool boot and its complement, the lumberman's over:

"In 1877, on a visit to the shoe jobbing house of Pancost, Sage & Morse, of Rochester, New York, Mr. Sage, sr., took me to see an article in which he was much interested, which was being made by a couple of foreigners—Frenchmen, I think—who had a little workshop in a cellar, and were there making a felt boot. This was the first attempt at making anything of the kind in the United States.

ONE BUCKLE "PERFECTION" FOR WOOL BOOT.

"Mr. Sage's idea was that this felt boot would be a capital thing if a rubber sole and vamp, or a rubber over-shoe, might be cemented on and made integral with the felt boot; and he sent on several pairs to New Haven, to which we attached the rubber foot part, according to his idea. And the way the felt foot soaked up the cement—at about 80 cents a pound—was something fearful. The boots were sent out to Rochester, and after a trial were condemned because the felt boot absorbed the perspiration from the wearer's foot, and there was no way of drying it out; so the matter was dropped for the time being.

"Shortly afterwards it appears that these foreigners in some way connected with E. G. Studley, of Grand Rapids, Michigan. It probably came about through the fact that Mr. Studley's father-in-law was a manufacturer of felt goods at that time in Mishawaka, and I always supposed that these Frenchmen went to Mishawaka, and in that way became acquainted with Studley, who induced them to go to Grand Rapids, where he opened up a factory which flourished for many years in the wool boot business. The article met with such favor that a number of companies started to manufacture wool boots. One of these was a concern in Chicago, or thereabouts, under the auspices of Armour & Co., who had wool remnants and cows' hair as by-products from their main business. This concern, however, was not a success, and was shortly wound up. Then several wool boot plants were started in the East; one by a prominent shoe manufacturer at that time popularly known as 'Joe' Davis, who had a factory somewhere down in Maine. Another was started at Matteawan, New York state, and another over in Orange County at Howells Depot. About the same time the Mishawaka Woolen Manufacturing Co. commenced to make the felt socks which gradually developed into the wool boot business, and after that a factory began operations at Hudson, Michigan.



WOOL BOOT.

"The rubber part was originally a plain rubber overshoe called a 'lumberman's' shoe. This was so low that it was not much protection against deep snow, and somewhere about 1885 one of the big shoe jobbers in Chicago, who had made a large contract for several hundred cases of felt boots, said that if I could get up a better overshoe than had been used to go over the boots, he would not only give me a large order for them, but would get us a correspondingly good order from another shoe jobbing house which had joined him in taking the entire product of one of the felt boot factories above mentioned. Under the stimulus of this proposition I got up what is now called the 'Perfection,' and gave it that name, adopting that form of foot covering because it was the cheapest form in which an overshoe could be made and come up high enough on the ankle, it being the old rubber buskin shape, and not shaped like the arctic or 'Brogan.' This had great vogue and sold off those two lots of felt boots like hot cakes, as they were put up in what was called a 'Combination,' that is, the overshoes fitted over the felt boots, the felt boots being sent to the Candee factory for that purpose, where they were fitted to the overshoe, repacked and forwarded to Chicago. The next year the other factories copied the shoe, appropriated the name 'Perfection,' and have been making them and calling them by that name ever since."

Tires to the value of $180,823 were imported into the Philippine Islands during the year 1913, and other accessories amounting to $90,414. During that year 624 automobiles were imported, which amounted in value to $886,710. This represents an increase of 196 cars over the imports of 1911 and an increase in value of $319,533, while accessories show a gain for the same period of $123,640.

Rubber Arbitration Extracts.

The obvious advantages of commercial arbitration have been set forth in THE INDIA RUBBER WORLD *with some frequency during the last two years, and much consideration has also been given to this subject by the Rubber Club of America. One point to be emphasized is the relatively insignificant expense of this method of procedure as compared with the cost of litigation. In the various cases arbitrated by the Chamber of Commerce of the State of New York, where from one to three arbitrators were engaged, the cost in no instance has exceeded* $150, *and in some cases has fallen below* $40. *In other words, the expense is negligible.*

ARBITRATION of differences between buyers and sellers of rubber is an old story in London. In New York, however, the custom is not as general. It is therefore of interest to be able to read a series of questions and answers at one of the arbitration proceedings. It may be said in passing that the case was settled to the satisfaction of all and at trifling cost. The rubber was unsmoked Eastern Plantation sheet and biscuit, the shipment calling for fair average quality. The arbitration proceedings ran as follows:

Statement by Mr. A.—

It may perhaps be not amiss just at this moment to say that perhaps this decision will be more far reaching than anticipated when we took up this question. If the standards that we are passing on today are to be accepted by merchants as being a proper delivery, the merchants in turn shipping those to manufacturers, and upon orders taken from them in the course of the sale of this quality, afterwards we being compelled to accept this as tender of the quality, and then being delivered to the manufacturers in accordance, and upon receipt by them, they refusing to accept it as proper tender of the quality bought, this would put the operator and the dealer in a very bad position. We have no redress from the manufacturers unless we wish to enter into a legal battle with them, if we accept this quality as proper tender, and when tendered by us to the manufacturers, and afterwards being rejected by them as not being the proper tender, in such cases that would be the result. Therefore, if this quality upon which we are arbitrating today is to be established, it will create a standard, so to speak, for future tenders, that may pass in the transactions between merchants. This tender of sheets and biscuits that was made by ..... Company was rejected by us on account of not being a proper tender of the quality. I just want to say that the quality that was handed to us we claim is the quality that is sold in London as sheets and biscuits and not first latex sheets and biscuits. I want to emphasize that distinction.

Statement by Mr. B.—

I object to the introduction as evidence consisting of circular letters from English houses. In the first place, the contract is made based on New York quality. There are contracts made in the trade as understood in London. There is nothing in these contracts stating the qualities as understood in London. Mr. A. has stated that there are different qualities sold in London as first and second. I do not dispute that, but we do not sell these goods, shipment in London; as a matter of fact, the shipment was made from Colombo.

Mr. C.—An arbitrator.

I know that there are London rules and regulations, but I am not familiar with them, except that I know there are grades, and they buy on description.

Mr. A.—I wish to state that the contracts do not say that the quality is represented by New York standards or anything else.

Mr. B.—The intent of the contract as to delivery and determination of the quality, is always understood as to the port or city or town or place where the rubber is delivered. There is nothing stated about delivery in London. The contract states delivery in New York. Consequently the determination of the quality would be as understood in the trade, and not as understood in London.

Question by Mr. A.—

Testimony of Mr. D., a weigher who assisted in drawing the samples.

Q. Did you find the rubber in any of the cases damp and mouldy? If so, to what extent? *A.* 15 to 25 per cent.

Q. When you say this rubber was damp and mouldy, did you find it wet? Did you find it wet in any part of the case? *A.* Certainly, in the center.

Q. How did you find the general condition of the cases that you examined? *A.* The dampness was in the middle and also mould. Some cases were mouldy throughout.

Q. Was it a wet mould or dry? *A.* Dry on the outside and in the center it was damp.

Q. Was the rubber taken out of the cases? *A.* Yes.

Q. Did you get all the rubber back in the same cases afterwards? *A.* No.

Q. You state the rubber was damp. Don't you think you could have got it all back if the rubber was stuck together or mouldy? *A.* It would be impossible to get it all back.

Questions by Mr. B.—

Q. Taking these samples as drawn and the condition of the rubber as found in the cases, the way they were sealed and wrapped up, would you say they would deteriorate or improve or change in any way from your knowledge of rubber since they have been here? *A.* I don't think they would.

Question by Mr. A.—

Q. Any rubber of any nature that has been taken from cases or bags, drawn out from the lot, separated and put in small packages, do you mean to say it will contain the same condition of moisture as if left in the case? Do you mean to say the samples would be drier or wetter, or that they would be in the same condition as when they were drawn? *A.* Naturally they would be a little drier packed in a bag.

Statement by Mr. B.—

If Mr. D. testifies that the samples have changed since being taken out of the cases I do not think the arbitrators can render a decision as to how much they have gone back.

Testimony of Mr. E.—

By Mr. A.—*Q.* When in London on different occasions you familiarized yourself with different qualities of rubber that were being offered and sold and bought here in this country on London standards? *A.* Yes.

Q. Deliveries made against contracts that are not up to the London standards, have their rejections been upheld? *A.* They have arbitration there.

Q. Have you in your experience in the United States rejected plantation rubber or otherwise on account of inferiority of quality? *A.* Several times.

Q. From London standards? *A.* Yes.

Q. This particular contract, there was nothing stated in it as understood in London? *A.* No.

Q. You did not purchase it in that way with that intention at the time? *A.* The intention when we bought that rubber was that it was to be to the standard.

Q. As it was understood in London? *A.* As it was understood in London.

Q. In making sales here of rubber, you make sales as understood in London and sometimes not? *A.* I generally sell according to sample or quality.

Q. As per sample? Then you sell sometimes as understood in London? *A.* Very seldom.

Q. Then what has the London standard to do with this case? *A.* A great deal.

Q. But you sell rubber both ways. You have made contracts as understood in London; have you not? *A.* I do not know whether we have ever made one.

Q. Never have? You sell simply on New York standard? *A.* On our own standard.

Q. This particular transaction was made on fair average quality and usual good quality in New York. We did not sell you this rubber on any of your own standards that there may be in New York.

Statement by Mr. B.—

This contract was made in New York. It is dated in New York. The rubber was delivered in New York. Now I do not see how they can bring in any London business. I would like to have a decision on that as to the London business. The contract is made here, the sale of it and delivered in New York.

Question by Mr. B.—

Q. You make your own standard? There is a recognized standard for rubber in New York. *A.* I know there is, but I say New York standard follows London.

Testimony of Mr. F.—An arbitrator.

By Mr. B.—*Q.* In your opinion a contract calling for fair average quality unsmoked sheets and biscuits, and another contract calling for good merchantable quality unsmoked sheets

and biscuits, and another contract calling for unsmoked sheets and biscuits as per London standard, do you consider there are any differences in the quality or description, any difference in the three standards mentioned? *A.* Yes.

Q. In other words, we do not recognize unless specifically stated in contract here the London standards? *A.* We do not unless so stated.

Testimony of Mr. C.

By Mr. B.—*Q.* You sell rubber I presume on New York good merchantable quality or New York types, or sometimes on London types? *A.* Yes.

Q. You consider there is a distinction, a difference between grades, do you not? *A.* We recognize London standards but go a little on our own judgment. We do the same on other grades of rubber. There are certain customs here in the trade of accepting certain blemishes if not too great. We do not know whether they would be rejected in London or not, and it is difficult to answer the question positively.

Q. If you were selling rubber based on your understanding of New York conditions and delivering to manufacturer and importer, and he desired you to put in as understood in London, would you hesitate about it? *A.* Very decidedly so.

Q. Then you consider there is in your mind some difference? *A.* There is a difference, but more in settlement and method of settlement. I mean by that financially. In London they determine to take a delivery of what is within certain grades. Here no such custom prevails.

Q. The only reason you hesitate is that you are bound to take rubber with allowances? *A.* Yes.

Q. Unless it states as understood in London you take New York determination of quality? *A.* There is this distinction. Dealers understand here London terms and conditions in selling to dealers, and I am necessarily more careful than in selling to manufacturers because they understand the terms and recognize them.

Testimony of Mr. F.

By Mr. A.—*Q.* Do you recognize a difference in quality between usual good quality and fair average quality? *A.* If I stated that before I was probably misunderstood. I intended to say there was a difference between London standards and good merchantable fair average quality.

Q. London standard, good merchantable—is that expression ever used in the trade? *A.* It is.

Q. A contract calling for good quality in one and fair average quality in the other, is there any distinction? *A.* I see no difference between fair average quality and usual good.

Testimony of Mr. G.—Another weigher.

By Mr. B.—*Q.* When you drew the samples with Mr. ..... did you find any excessive amount of moisture in these goods? *A.* No, it seemed to be pretty dry.

Q. The moisture then was not apparent? *A.* No, not apparent.

Q. In these particular samples the moisture was not so it was running off? *A.* Oh, no.

Q. Could you see it like dew on the grass? *A.* No.

Q. Was there any excessive amount of mould on these sheets? *A.* There was a slight amount of mould, but I would not call it excessive.

Q. Was it dry or wet? *A.* Dry.

Q. Is it your opinion that if this rubber was moist and mouldy and stuck together that it could be placed back in these cases? *A.* My opinion is that it could be in most cases. There would be such a small proportion left out of the cases that it would not amount to more than one bag or one case at most.

Testimony of Mr. C.—

By Mr. A.—*Q.* In accepting deliveries of plantation rubber in your experience what percentage have you considered acceptable as a fair delivery, what percentage of mould and dampness have you considered a fair percentage for acceptance of a good delivery? *A.* I do not think we settled on any percentage. We look at the rubber and form our opinion. If it is all right and does not contain too much objection we accept it. There is no fixed percentage I have heard of.

Q. If some of the rubber that is in the lot is absolutely bad would you consider that it had to be accepted in the lot tendered? *A.* No.

Q. If part of a lot that is tendered you is in such condition that it is not acceptable, the custom of the trade is that you have the right to reject the lot? *A.* It depends entirely upon the contract. On this contract you could not reject it, in my opinion. You could reject the portion, and the seller has a perfect right to make another tender. He could tender the same over, having withdrawn the portion that is not up to the standard.

Q. Then according to your answer you have the right to reject the entire lot if part is inferior? *A.* It depends upon the contract. On a specified lot of Ceylon rubber if you find a portion of it inferior you are entitled to reject it, in my opinion; but on a straight contract the seller has the right to refill it.

THE TESTING OF MECHANICAL RUBBER GOODS.

AS will be recalled, a conference of experts interested in the question of standardizing the specifications and tests of mechanical rubber goods, met at New York on December 7, 1911. On that occasion a committee was appointed, consisting of C. R. Boggs, Simplex Wire & Cable Co.; W. S. Clark, General Electric Co.; W. A. Del Mar, New York Central & Hudson River Railroad Co.; W. B. Geiser, New York Central & Hudson River Railroad Co.; J. P. Millwood, consulting chemist; P. Poetschke, Lederle Laboratories, and H. B. Rodman, Pennsylvania Railroad Co. At a later date were added: E. L. Willson, Hazard Manufacturing Co., and J. B. Tuttle, United States Bureau of Standards.

The committee decided to confine itself to the development of a specification and an analytical procedure for compounds of the 30 per cent. Pará type, by which samples of different rubbers were analyzed. Twelve regular committee meetings were held, in addition to numerous sub-committee meetings. After nearly two years' work the committee was in a position to submit on October 1, 1913, a preliminary analytical procedure, and a chemical specification for a compound containing 30 per cent. of *Hevea* rubber with mineral fillers, with a request that both these proposals should be considered tentative in order that the results of experience during the ensuing year should ultimately be incorporated in a final report.

The most important parts of the above named provisional reports have been reprinted by the Simplex Wire & Cable Co., Boston, for distribution among those interested.

Meanwhile the Bureau of Standards has issued Circular No. 38, with illustrations, describing the methods of rubber testing in use at that institution, to which a supplement has since been published, embodying the progress made by the Joint Rubber Insulation Committee. This publication must not, it is remarked, be taken as an official indorsement of the methods indicated.

In the "Explanation of Specification" the committee states that experience has shown that compounds with the characteristics of good *Hevea* rubber may be relied upon to be more permanent than those made of rubber of other grades. It is further stated that the term "Hevea" applied to rubber means rubber from the *Hevea Brasiliensis* tree whether wild or cultivated, and regardless of the locality in which it has been grown. Much interest will, therefore, attach to the final report of the Joint Rubber Insulation Committee, which may be looked for about the end of the current year. Colonel Samuel Reber, of the United States Signal Corps, has presided at the various meetings of the committee.

The annual report of automobile statistics for New York State showed the total amount of license fees collected by the State—owners', chauffeurs' and dealers'—in 1913 to have been $1,275,727. Similar collections from the opening of new registrations on February 1 to April 25, amounted to $1,008,598, about half of which, or $556,337, has been contributed by New York City.

New companies were incorporated during April with individual capitalization of $100,000 or over and capital increases authorized involving the sum—including all industries—of $186,752,000, of which charters filed in the Eastern States represented a capital of $136,185,000. Among the largest of these was the Sterling Gum Co., a New York corporation with a capital stock of $6,000,000, while an incorporation of perhaps greater interest and importance to the rubber industry was that of the Norwalk Tire & Rubber Co., of Connecticut, capitalized at $1,500,000. Of the Delaware incorporations might be mentioned the Malaysian Chicle Co., with a capital of $500,000.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE accompanying illustration will give some idea of the variety of molds made by the Die Sinking & Machine Co., of Akron. This company does not manufacture any of the larger molds, devoting its attention to one line of manufacture and specializing in molds for mechanical rubber goods and druggists' sundries. It was established fifteen years ago, operating at first under the name of Herrington & Son, and was the first in this country, or probably anywhere, to make a mold that would successfully produce hot water bottles and syringe bags. While the company claims that no mold is too difficult for it to undertake, it makes a special feature of its department for bag and bottle molds. This company has recently issued an attractive catalog, which illustrates molds for numerous articles not shown in the cut herewith.

* * *

Incorporation papers have been granted at Columbus, Ohio, to the Pike Rubber Co., located at 126 West South street, Akron, with a capitalization of $50,000. The officers are O. C. Pike, president; Ed Voris, secretary; Frank Selzer, treasurer, and Fred Grethers, manager. Mr. Pike, who is now engaged in the manufacture of rubber sundries, is a man of large experience in the rubber business. He says that the firm will remain in its present location for a while. Recently a large manufacturing building was bought by the parties backing this company, and this building, it is thought, may be occupied by the company in the near future.

* * *

The Lincoln Rubber Co. has been organized under the laws of the State of Ohio, with a capitalization of $10,000. John Hadfield is president, R. G. Nevin secretary and treasurer. This company has bought out the Hadfield Rubber Co., and is manufacturing a line of general rubber sundries, including a special high grade surgeons' glove, with an additional feature of enlarged knuckles, so that there will be no binding when the hand is shut. This glove is known as the "Knuklfit."

* * *

A series of meetings has lately been held at the factory of the B. F. Goodrich Co., attended by foremen, inspectors, managers and superintendents of the plant to the number of almost 1,000, to hear talks on safety, and to discuss ways and means of increasing efficiency. Mr. E. C. Shaw, the works manager, addressed those present on the subject of "The Ideal Working Condition," while W. W. Williams, representing the National Association of Manufacturers, gave a safety lecture, and moving pictures illustrating some of the things that make for safety in big plants were shown. This company maintains an elaborate department of safety and hygiene, which gives advice to the men on the treatment of injuries, and looks after them generally. The object of this campaign is to make "Safety First" not only a part of the company's tire design and construction, but to have this element enter into the processes of manufacture, thereby adding to the efficiency of the 15,000 workmen scattered over an area of 75 acres.

An improvement in dredging sleeves, which will be particularly appreciated in general engineering where this is an article of importance, has been made by the Goodrich company. The durability of dredging sleeves, no matter how good their other features, has heretofore been susceptible of serious impairment on account of excessive expansion. This difficulty has, however, been largely overcome by an improvement in fabric construction applied to both the "Pinnacle" and "Goodrich" grades of dredging sleeve. A fabric of special design is employed, which in the new sleeve as thus perfected is said to reduce expansion to a minimum.

Public schoolteachers to the number of 500 recently made a Saturday visit to the Goodrich plant on an invitation extended by the company. The party was divided into two sections, and each group was provided with guides, who explained every phase of the work.

* * *

The Firestone Tire & Rubber Co. is again making additions to its plant. When plans were made for the new building added in 1911, it seemed that this plant was large enough to take care of the company's needs for years to come. However, in 1912, it was necessary to again expand, and further additions were erected; 1913 found the company again cramped for room, and it again expanded; 1914 is but a repetition of the past, and the demand for Firestone tires makes it again necessary to add to the factory. One of the present wings 60 feet wide and five stories high will be extended on the north 125 feet. On the south one of the wings will be extended 125 feet, with the basement and first floor covering a space 140 feet in width. This will give approximately 95,000 square feet additional floor space.

During 1913 three new boilers having a capacity of 900 horsepower each were installed by this company, adding 2,700 horsepower to the already large boiler capacity. A new 4,000 kilowatt generator and steam turbine is now to be installed to furnish additional power needed for the extensions. The present switchboard will be replaced by a new gallery board 70 feet in length. After two years experimenting in the manufacture of bicycle tires, this line has been added to the company's production. These tires are made with two styles of treads, the non-skid, which is an exact reproduction of the automobile non-skid design, and also a corrugated tread. The company recently added generator tubing, pump tubing and horn bulbs to its line of accessory products, the horn bulbs being made with a standard thread, and with either brass or nickeled mountings. It is also now prepared to furnish friction tape in one, two and four-ounce rolls. Heretofore nothing smaller than one-half pound rolls has been furnished by the company.

C. H. Sorrick, formerly head of the carriage tire sales of the Firestone company, now has charge of the pneumatic tire sales, taking the place formely held by George J. Bates.

* * *

The receivers of the Royal Rubber Co. have been offered $34,000 for the company's lands and buildings, the same comprising 2¼ acres, with 150 yards of railroad frontage, located near the center of Akron. The court upon investigation, not considering the offer high enough, instructed the trustees to take care of the insurance premiums and a few small necessary debts contracted by the receivers, and ordered that the land and buildings be offered publicly for sale.

* * *

The Kelly-Springfield Tire Co. has just completed one of its new buildings, celebrating the termination of this work by a factory ball and luncheon.

* * *

Since January 1 of this year, when all employes on the factory payroll of the Goodyear Tire & Rubber Co. underwent physical examinations, every prospective employe has submitted to a similar examination. This is not so formidable as it may sound, nor does the discovery of minor ailments render a candidate ineligible for employment, but it enables the company to place him where he can give the maximum of service with

least possible discomfort to himself. This method of placing employes is supposed to be largely responsible for the fact that with a force of 7,500 men, not greatly larger than the number employed last year, the company is producing nearly double the product turned out at that time.

* * *

A few months ago, when General Blanco of the Mexican Rebels was attacked by the Federals on an automobile trip from Ensenada to Matamoras, bullets literally riddled the car and all four pneumatic tires. The vital organs of the car were not damaged, and the tires were quickly repaired. This matter came to the attention of Capt. Alfred Aloe, depot quartermaster of the United States Army at Galveston, under whose supervision the United States automobiles are maintained at that place, and so impressed him that he felt it advisable to change from pneumatic to solid tires, thus obviating the danger of flying bullets putting tires out of commission.

* * *

The Indianapolis Speedway record in 1911 was 74.59 miles per hour, made by Ray Harroun. Dawson won in 1912 at a speed of 78.72 miles per hour. The 1913 race was won by Jules Goux in a heavy Peugeot No. 16 at an average speed of 75.93 miles per hour. The preliminary tests of machines and tires which have been made on the Speedway by the contestants indicate that the former records will this year be broken.

* * *

The balloon "Goodyear" recently made its record altitude flight at Akron, reaching an altitude of 8,700 feet.

H. P. Harris, an experienced aviator, lost his life at Silver Lake May 3 while making a dip. One of the wings of the biplane broke, evidently the material not being strong enough to stand the immense strain occasioned by the change of flight.

THE RUBBER TRADE IN BOSTON

By Our Regular Correspondent.

"THE rubber business is good." "The rubber business is rotten." These are the answers to your correspondent's question, "How's trade?" The fact is that in nearly all lines business continues somewhat conservative, and the man who says that it is "rotten" is now complaining because his customers, having stocked up, are waiting for a retail demand before placing further orders; while the man who declares that business is excellent may be whistling to keep up his courage, just plain —well—prevaricating.

The above paragraph may sound pessimistic, but it is the conclusion arrived at from a more or less extensive canvass of the trade in this city. The call for automobile tires naturally is good at this season, and yet there are some complaints that it isn't what it should be. This in part is laid to the backwardness of the spring season, which has not only held back pleasure riding, because of the cold, but has greatly interfered with the regular spring road work in the suburban districts.

The rubber clothing business has been unusually good for many months, and now there is a lull, which is not unwelcome to the manufacturers who are behind in their orders. However, salesmen are encountering a rather widespread indisposition on the part of their customers to order largely at this time, hence their report of quiet trade. Mechanicals are in continued steady, but not heavy, demand. There is a manifest policy on the part of many large industrial establishments to buy from hand to month, and to rely on the mills or the distributing agencies to carry stock, rather than stock up heavily as in the past. Druggists' rubber goods manufacturers report some large orders. The footwear people are away behind normal, and salesmen are pushing customers hard to get detail orders. Those concerns making tennis shoes, however, are working their forces overtime, so good is the demand for this low priced style of footwear.

Speaking of footwear, the wonderful increase in the demand for rubber soled leather shoes is a marvel of the trade. Rubber soles are in demand in one-third to one-half of the shoe factories in the country. The consequence is a large increase in the number of factories now turning out rubber soles. There have been for some time quite a number of manufacturing concerns that turned out a greater or smaller supply of rubber heels. With hardly an exception these factories have added rubber soles, with or without attached heels, to their production. Some of them make good soles, which contain a decent proportion of new rubber. Others are using so much reclaimed rubber and rubber substitute that they can hardly be called rubber, except by courtesy. Manufacturers who buy "rubber" heels at less than four cents a pair, and soles at proportionate rates, will kill the demand for rubber soled footwear, for such cheap stuff breaks across the bend of the foot, and any one having such an experience is apt to judge all soles alike and go back to leather. Rubber soled footwear has many real advantages, but good rubber is necessary in its manufacture.

* * *

About the middle of last month an important "luncheon" was held at the American House in this city, under the auspices of the Chamber of Commerce, when "New England and the Foreign Trade" was the subject of discussion. The Secretary of Commerce was the principal speaker, and ex-Mayor Fitzgerald presided. As a result of this meeting a foreign trade expert will be hired, who will acquaint manufacturers with foreign methods, assist them in foreign selling campaigns, aid in bringing foreign buyers to New England, and also in securing competent foreign agents for manufacturers. To do this subscriptions were solicited, and a large number of firms have already subscribed One Hundred Dollars each year for three years, while to this the Chamber of Commerce has agreed to subscribe One Dollar for every Two Dollars raised by subscription. I notice in the list of those thus subscribing the names of the Boston Woven Hose Co. and Thomas A. Forsyth, president of the Boston Belting Co.

* * *

Two handsome pieces of rubber footwear advertising have just been turned out by the A. W. Ellis Advertising Co. for the Hubmark Rubber Co., of this city. They are of heavy cardboard, so folded as to give six pages on each side, and on one side wonderfully graphic representations of the various boots and shoes made under this trade mark. These half-tone engravings are embossed with such detail that every seam, every overlay, every buckle, every lace and every label is brought into relief; and this, with the color printing and the varnish, makes these folders almost as good as the samples themselves, as far as looks are concerned. This advertising house is doing excellent work for the Hub-Mark rubbers, and this particular department is under the direction of Chester J. Pike, whose many years of experience in the rubber footwear business specially fit him for this work.

* * *

The sale of the going business of the Walpole Tire & Rubber Co., which was advertised to take place at Walpole on May 11, was not successful, because only one bid was offered, and that was less than the upset price fixed by order of the court. This upset price was $1,150,000, and the one bid received was $800,000, this bid being made by a representative of the stockholders' committee. This auction offering being ineffective, the matter will be again brought before the court on June 1 at 10 a. m., and as under the law sale of the company's real estate must be advertised once a week for four weeks prior to sale, a sale cannot be held before about July 1. Endeavors are being made to allow sale to be effected without any limit as regards bids. There is now some considerable unwillingness on the part of the stockholders to have a sale at this time, for the receivers are carrying

along the business at a satisfactory profit. It is a growing sentiment that with a continuance of such a showing it is likely that a fair price can be obtained within a reasonable time.

* * *

Quincy Tucker, Boston representative of the Aluminum Flake Co., of Akron, reports that not only is the demand for this product increasing steadily from rubber manufacturers, but that new uses are constantly being found for it in other industries. Mr. Tucker is somewhat of a traveler, and has spent much time in the South American wilderness. Having made the dangerous trip through the falls and rapids of the Madeira river about ten years ago, before the present railroad work was resumed, Mr. Tucker can fully appreciate the difficulties encountered by Colonel Roosevelt on a near-by tributary without competent pilots and in unknown waters. Mr. Tucker has had his own experiences on the ocean wave and the turbulent river, and will confine his sea trips this year to daily voyages from and to Hull, where he will take up his abode for the summer season.

* * *

The Interchangeable Rubber Heel Co., of Taunton, which has been manufacturing a patent rubber heel that can be attached to and detached from boots and shoes, has recently been reorganized under the name of the Taunton Rubber Co., and is now manufacturing rubber heels with the company's brand, as well as making similar heels for those jobbers and distributers who may wish to place their own lines on the market. It is reported that the company contemplates starting the manufacture of rubber soles for shoe manufacturers. George Greene is now general manager of the company.

* * *

At an adjourned meeting of the directors of the Patterson Rubber Co., of Lowell, Mass., held Saturday, May 23, the resignations of John S. Patterson as president and director, and James M. Patterson as vice-president and factory manager were accepted, and these gentlemen, who had been identified with the company since its establishment, severed their connection with the corporation. John H. MacAlmon was elected a director, and Walter N. Macdonald was appointed general factory manager. The offices of president and vice-president were not filled at that meeting. The company continues manufacturing automobile tires, which are receiving the commendation of the trade.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

MUCH improvement can be noted in the general condition of the rubber trade here during the past month. The warmer weather of the last few days has given a marked impetus to garden hose sales, and local shippers have been compelled to work over time in order to keep pace with the demand.

Rumor is to the effect that an organization of members of the local trade may be formed in the near future. At the present time the rubber trade here is without an organization of any sort, and its members, with the exception of those who have been in the business many years, are not known to one another. Under existing conditions they have no means of meeting in a social way and learning what a fine fellow a competitor may be when he lays aside the weapons of business. Six or seven years ago an unsuccessful attempt was made by the rubber men of the city to form such an organization. Here is what one prominent rubber man has to say regarding the history of that effort:

"Everything went fine at the first meeting, which was held in the Palmer House, as I remember. Long speeches were made about co-operation in the rubber trade, and enthusiasm ran at a high pitch, as far as could be seen. More than two dozen members of the local trade were present at that meeting. Preliminary arrangements were made for organization, and everybody present was taxed $25. At the next meeting fewer were present, and less was said. Most of those who came were salesmen. The heads of the various concerns, who had shown a marked interest at the previous meeting, stayed away for some reason. Several meetings were held in all, but the attendance dwindled down until only a few came. After that no meeting was held, and it was admitted on all sides that the attempt at local organization of the rubber trade had failed. What became of the $25 contributions I never learned. I did not get mine back. I hope the money was devoted to some good cause."

Such is the story of past attempts to organize. The spirit of today, however, is different even from that of six or seven years ago, and the rubber men to whom the writer talked seem aware that they are behind the times in having no local organization.

* * *

The Rubber Products Co. has incorporated for $10,000, and will engage in the manufacture of a general line of specialties containing rubber as a major part of the composition. While the incorporation papers have just been returned from the state capital, word has been received to the effect that manufacture will begin at once under the charter. The incorporators are Harry Okin, J. S. McClellan and Louis W. McIntyre, all men of experience in the rubber business.

* * *

John Mills, manager of the New York Belting & Packing Co., 130 West Lake street, said to your correspondent: "We have been shipping much hose and much belting to the g ain elevators. The mines have also ordered much packing. One of the most troublesome of the local conditions has been a strike of the brick-makers during the past month, which has thrown 25,000 men out of work, and affects thousands more in other lines of business. This has meant a perceptible slowing down in many branches of endeavor. Building operations are now practically at a standstill, and there is no immediate prospect of a settlement. This has had a marked effect on the local sale of belting, which has been felt, I believe, by all of us."

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

BECAUSE of the close relations of the suspended Atlantic National Bank, of this city, the Consumers' Rubber Co., of Bristol, and the Walpole Tire & Rubber Co., of Walpole, Massachusetts, anything which affects one, no matter how indirectly, has an interest for all. Consequently the result of the sale of the Walpole Tire & Rubber Co.'s plant at Walpole, which was advertised for Monday, May 11, was watched with considerable interest here. Only one bid was received—that made by Colonel Metzler, of Boston, representing the stockholders' committee. This was for $800,000, but as the upset price had been fixed previously by the court at $1,150,000, this offer was not accepted, and the matter will again come before the court on June 1.

Among the Providence people present at the sale were Michael J. Houlihan, vice-president of the Walpole company; Ernest W. Tinkham, former president of the company and chairman of the board of directors of the Atlantic National Bank, and R. C. Curtis, receiver of the Atlantic National Bank.

* * *

Robert W. Emerson, of the local law firm of Mumford, Huddy & Emerson, who is receiver for the Consumer's Rubber Co., of Bristol, has not yet succeeded in disposing of the plant, which has been continued under operation on certain lines of goods easily disposed of. He has several times granted options, none of which, however, have resulted in final purchase.

* * *

Harlow Waite, general manager of the Revere Rubber Co., of

this city, is still in charge of the plant on Valley street, a new superintendent not having yet been selected.

Arthur Homer Carr, superintendent of the rubber thread department of the Revere company, was married recently at Grace Church, New York, to Miss Ethel Howard Tuttle, of Providence. Mr. and Mrs. Carr sailed the following day on the "Mauretania" for a two months' trip abroad, during which they will visit London and Paris, as well as Italy, Germany, Austria and Russia.

* * *

The local branch of the B. F. Goodrich Co. has been removed from its former cramped quarters in Weybosset street to the new building facing Broadway, at the junction of Jackson and Cope streets. The first floor is to be used as office, shipping department and salesroom. The basement is designed to be used entirely for storage of solid tires for motor vehicles, and there is also a shop in the front end of the basement equipped with a hydraulic press and other apparatus for applying Goodrich wireless solid truck tires. The second and third floors will be used for the stocking of pneumatic tires. The building is triangular in shape, three stories high, of brick construction, and was erected specially for occupancy by the Goodrich company.

* * *

The joint standing committee on fire department of the City Council of Woonsocket has awarded a contract for 1,000 feet of fire hose to the United & Globe Rubber Manufacturing Cos., of Trenton, New Jersey, which bid 60 cents per foot.

The contract to furnish the fire department of Fall River with 2,500 feet of 2½ and 3-inch hose has been awarded by the board of fire commissioners to the same concern, which was the lowest of seven bidders. The prices bid were 60 and 74 cents per foot respectively.

* * *

A branch of the Alling Rubber Co. was opened on Monday, May 4, on High street, Westerly, with a complete line of everything in rubber.

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A new bed plate for the engine at the factory of the National India Rubber Co., Bristol, was installed early in the month, a force working from Saturday shut-down at noon until Monday morning in order that there need be no cessation of work among the employes of the factory, as the shoe making departments are rushed with orders at present.

* * *

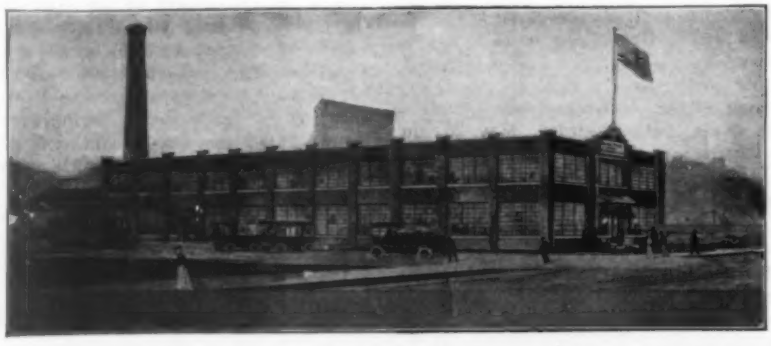
The insulated wire factory of the Bourn Rubber Co., in the rear of 12 Constitution street, was entirely destroyed by fire May 19, entailing a loss estimated at $25,000, which is fully covered by insurance. The blaze started in some coal dust in the boiler-room and spread rapidly. Nearly a hundred persons were at work in the building at the time, and considerable confusion prevailed in the efforts of the employes to make a hasty exit. One young woman jumped from a second story window to the street, and was badly cut and shaken, tho not seriously injured. One fireman was overcome by the dense smoke. Several dwellings surrounding the factory were more or less damaged. The building will probably be rebuilt at once.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

A NEW RUBBER FACTORY.

THE Delion Tire & Rubber Co.'s new factory at Trenton is rapidly nearing completion. This company owns three acres, located on the main line of the Pennsylvania railroad, with excellent switching facilities. The Trenton trolley runs in front of the factory, affording easy access to and from the city. The main building is 285 feet long and 75 feet wide, with two stories, containing a total of 42,750 square feet of floor space. The construction is of a modern substantial factory type, which is necessary to support the heavy rubber machinery. The building is of red brick, with large windows, which admit the maximum amount of daylight. Unobstructed floor space and convenient elevators are provided to assist in efficient plant management. The Birmingham Iron Foundry, of Derby, Connecticut, is installing the washers, mixers, calenders and heaters. The molds and patterns are of the wrapped tread one-cure system, manufactured by the John E. Thropp's Sons Co., of Trenton. The machinery and plant of this model factory are intended to make it the most complete and up-to-date mill of its size in the East. Its product will consist of non-skid and plain tread tires, with a capacity of 400 tires and 600 tubes a day. The officers are as follows: O. E. Condit, president; W. W. Thomas, vice-president; H. H. Coleman, secretary and treasurer; Lionel Emdin, sales manager. The directors are: O. E. Condit, W. W. Thomas, Wm. T. Rock, Chas. R. Whitehead, L. B. Tompkins, F. G. Hasselman, Lionel Emdin, Wm. R. Brown and H. H. Coleman.



PLANT OF DELION TIRE & RUBBER CO.

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So great has been the interest in the recently closed up-keep contest between chauffeurs operating cars equipped with Ajax tires that the Ajax-Grieb Rubber Co. has offered prizes in another similar competition on tires purchased any time after April 1 of this year—the contest to close on March 31 next. The rules governing this competition are the same as those mentioned in the May number of THE INDIA RUBBER WORLD, page 428, in connection with the one just closed, and prizes to the amount of $5,000 are again offered—a first prize of $500, a second of $300, three of $200, and 205 other prizes in amounts of $100, $50, $25, $20 and $10. The competition is for employed chauffeurs only, tho the benefits extend beyond the chauffeur to the owner of the car, through the endeavors of the former to get the maximum service from his tires, and the greater care and attention he is likely therefore to give them. The record for the previous contest was 16,783 miles, and the average for the 208 winning tires was 6,906 miles.

This company was obliged recently to suspend operations for a few days, the first time since starting in business, in order to replace certain machinery which had given out from constant service. Between 200 and 300 persons suffered enforced idleness for about a week as a result of the accident.

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Factory additions and the installation of new machinery are contemplated by the Empire Rubber & Tire Co., of this city, the present plant, equipped for the manufacture of automobile tires and rubber specialties, and operating night and day with a

force of 500 employes and a daily output of 900 automobile tires, being inadequate to take care of the demand.

* * *

William Burkhardt, for the past 30 years in the employ of the John A. Roebling's Sons Co., as foreman of the steam fitting department, died at his home at 24 Hewitt street, this city, on May 5, from a complication of diseases. He was in the sixtieth year of his age, a member of the Working Men's Sick and Beneficial Society of the John A. Roebling's Sons Co. and of a number of lodges and German singing societies.

* * *

Garden hose used to stop the progress of the flames until the arrival of firemen was quite effective recently when a barn at Lambertville caught fire, and was the means of saving it from complete destruction.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent.

PREDICTIONS are made that an unusually large number of tires will be sold in California this season to meet the demand of tourists, one large San Francisco dealer stating that his sales in a recent week to owners of cars who are contemplating long trips into the country were more than double those of a year ago. The condition of the roads in the state is favorable to such trips.

* * *

A new service station has been completed and opened by the San Francisco branch of the Fisk Rubber Co., in connection with its sales department. When this branch moved into its present quarters on Van Ness avenue early in 1913 a service station was installed which was felt to be adequate to meet the demands anticipated. The contrary proved to be the case, however, and it was found necessary to secure extra accommodations in the adjoining property and to considerably increase the size and capacity of this station.

An agent of the company gives some valuable advice to prospective purchasers of tires in the matter of supplying correct specifications when ordering. He states that if the particular style or type is mentioned much delay and annoyance could be avoided, going on to say that: "Regular clincher tires have stretchable beads and are designed for use on regular clincher (one-piece) rims; altho they are sometimes used on quick detachable clincher rims. When used on regular clincher rims, it is rulable for sizes including the four-inch and above to use chips and staybolts.

"If regular clincher tires are used on quick detachable clincher rims, it is necessary to use flaps with them to protect the inner tubes. Quick detachable clincher cases have non-stretchable beads and can only be used on quick detachable rims having removable clincher side rings. This style should always be equipped with flaps.

"The quick detachable cable-base tires, otherwise known as straight-side or straight-bead, have non-stretchable cables imbedded in the base and are designed for quick detachable rims. This style should be equipped with flaps."

* * *

A new company has been formed in San Francisco, under the name of Schmid-Jeffress Co., for the retail distribution of tires. The firm, which is composed of E. F. Jeffress, formerly manager in northern California for the W. D. Newerf Rubber Co., and Chris Schmid, has secured desirable quarters on Van Ness avenue.

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The policy of the Goodyear Tire & Rubber Co. in separating its wholesale and retail departments has led to the discontinuance of the elaborately fitted up Van Ness avenue headquarters and to the establishment of a stock warehouse in the downtown district. Two representatives of the company, A. F. Osterloh, assistant secretary and head of the sales organization, and H. B. Hamlen, in charge of the credit and accounts department, have made quite an extended visit to the coast, outlining the company's policy and going over matters generally with their various branch managers. The San Francisco branch, of which Frank Carroll is manager, is to remain headquarters and central distributing point for the Pacific Coast, and a much larger and more varied stock of tires and accessories will be carried than ever before.

This company's Los Angeles branch, under the management of E. Lingenfelder, has moved to Twelfth and Olive streets, where they have taken the entire three-story and basement building formerly occupied by the Maxwell company. In the new quarters the truck tire department is in the basement, an electric elevator being provided to convey the trucks to this department to have tires fitted.

* * *

There is a prospect that San Francisco will soon have a gum factory, a representative of the American Chicle Co. having recently been looking over sites in this city for such an industry. Should it be established, the expectation is to invest $200,000 in the enterprise, which is to give employment to about 300 persons.

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The W. D. Newerf Rubber Co. has opened its new branch at Pico and Hope streets, Los Angeles, with Walter Sahland as manager.

* * *

A shipment of machinery recently arrived for installation at the plant of the Panama Rubber Co. at Compton included a hydraulic ram and pot heater weighing fifteen tons. The installation of machinery for this plant, now nearing completion, has been in charge of E. E. Harding, a mechanical engineer.

* * *

The Spokane branch of the United States Tire Co. has had added to its territory five counties formerly belonging to the house at Butte, Montana. "Nobby Treads" are making a steady advance in popularity, and being equally adapted for summer and winter service, they have been adopted for exclusive use by one of the San Francisco taxicab companies on their taxis and touring cars, a service which is probably harder on cars and tires than any other in which they are ever engaged.

* * *

A new type of inner tube is now on the market, made by The Savage Tire Co., of San Diego, and known as the "Red-Grafite." This tube is made of red gum and is so constructed that both the splice and the valve-base—which is different from that of the ordinary type—are guaranteed for the life of the tube. Its walls are thick—⅛ of an inch in a 34 x 4 inch tube—and fine graphite is applied in such a manner that it will not flake off with use, giving the tube a permanent graphite surface and thus eliminating the internal heat caused by chafing and sticking in the casing, as well as reducing the danger of pinching.

* * *

The B. F. Goodrich Co., of Akron, has established a new branch at San Diego, of which A. J. Straney, for some time connected with the Los Angeles agency, is manager.

* * *

Negotiations are in progress for the building of a plant at Colfax, California, for the manufacture of fireproof material from asbestos obtained in the Iowa Hill mines of that section, where there is a large deposit of asbestos reported on by experts as being of superior quality.

* * *

The Norman Peart Tire Co., of Oakland, distributors of Ajax tires in that section and one of the oldest established tire vulcanizing and retreading concerns on the coast, has moved to larger quarters at 1776 Broadway, where a stock of motor supplies will also be carried.

* * *

The Seattle branch of the Goodyear Tire & Rubber Co. has moved from its former location at Broadway and Pine street to the two-story building at 814-816 East Pike street.

A Distinguished Rubber Chemist.

IN the manipulation of rubber, and in the manufacture of rubber goods, chemistry plays an important part. Prominent in this work is Stephen P. Sharples, of Boston, whose researches and investigations have been of great value in the reclaimed rubber industry.

This well-known chemist was born in 1842 in West Chester, Pennsylvania, where his Quaker paternal ancestor bought land of William Penn in 1682. His mother's ancestors were Welsh, who settled in Philadelphia previous to 1700.

Stephen Paschall, his great-grandfather, was one of the first chemists in America and built one of the earliest steel furnaces in Philadelphia. He was the first to make a platform scale in that city.

Stephen Paschall Sharples inherited from this ancestor that love of study, experiment and investigation which has determined his career and made him so successful in his profession. Mr. Sharples' education included the common school of the winter months and later a course in the West Chester Normal School. A term as teacher was followed by two years in a machine shop and a year in the Agricultural College of Pennsylvania. Every summer he worked in the fields, running mowing or reaping machines, with which he had become familiar during his machine shop experience.

PROF. STEPHEN P. SHARPLES.

He then entered the Lawrence Scientific School of Harvard University, specializing in chemistry, graduating in 1866 with the highest degree granted by that school. He continued his studies in Cambridge as a resident graduate until the winter of 1867, then going as teacher in a private school in West Chester, thence to Lehigh University, where he spent a year teaching chemistry, and in his leisure time watching the manufacture of zinc and iron at the works at Bethlehem. Then for three years he occupied the position of assistant to Dr. Gibbs, his professor at the Lawrence Scientific School, from which position he was called to become assistant editor of the "Journal of Chemistry," adding to this editorial work considerable practical chemical investigation. He continued in this editorial position until the great fire in Boston in 1872, after which he embarked in business on his own account as an analytical and consulting chemist.

While with the "Journal of Chemistry" he was called as an expert in two important suits in patent litigation, one on nickel plating and the other on canning green corn, with the result that both these processes became public property.

For eighteen years he was a professor of chemistry in the Boston Dental College, and during most of this time was State Assayer of Ore and Metals, and Assayer and Inspector of Liquors for the Commonwealth of Massachusetts. While in the latter capacity he was instrumental in placing upon the statute books two laws, one defining as an intoxicating liquor any beverage containing over one per cent. of alcohol, and the other limiting the number of licenses to one to each 1,000 inhabitants in any town, and one to each 500 in the city of Boston. This law cut the number of licensed liquor sellers in that city from 2,500 to about 800.

In 1880, in co-operation with the late N. C. Mitchell, Mr. Sharples devoted much time and study to the reclaiming of waste rubber. Today there is not a factory in the country using the acid reclaiming process which does not use some of the processes devised or put in operation at the Mitchell establishment in Philadelphia.

He was the first to propose the separation of iron from the scrap by a magnetic machine. He assisted in devising a process for separating sand and brass from the rubber. At one time he made an investigation, extending over many months, on the best methods of coagulating *Castilloa* latex, the results of which, as well as of much other work, have never been published, as they were made for his many clients as a chemist.

This work in the rubber field gave him a practical knowledge of the processes, so that when, in 1890, suits were brought against infringers of the patents he became the principal expert witness. The suits were not successful, the judge deciding that altho there was no doubt of the invention, the patents, however, were too loosely described to hold the defendants as infringers.

Another important legal case was that in which Professor Sharples was the first to employ photography to prove changes in a legal document, a method of detection which has since played an important part in many cases, both civil and criminal.

The Professor has traveled extensively, investigating mining property, and has visited nearly every State in the Union. When the phosphate industry was established in Florida, he spent much time there investigating the deposits of phosphate rock, and later did similar work in South Carolina.

But if chemistry is his vocation, he certainly has his avocation. He is deeply interested in genealogy, and was at one time editor of the "Genealogical Magazine." He was joint editor of "The History of the Kimball Family" and editor of "The Records of the Church of Christ in New England." His chemical and scientific books and articles comprise a long list, as do also the societies of which he is a member.

Enough has been said to show the breadth of his studies and the scope of his abilities. Altho beyond the biblical limit of three-score years and ten, he is still active, present at his laboratory on Broad street, Boston, every working day, analyzing, studying and experimenting with all the ardor of men of half his age and one-tenth his experience. He is a member of the Rubber Club of America and rarely misses a meeting or an outing of that body, among whose members are many who, besides having benefited by his researches, deeply appreciate him as a personal friend, and hold him in the profoundest respect for his notable scientific achievements.

News of the American Rubber Trade.

MONATIQUOT RUBBER WORKS COMPANY.

THE Monatiquot Rubber Works Co., of South Braintree, Massachusetts, completed the fourth year of their operations last April. Their products are known as "Naturized Rubbers," the most prominent of which is their "Squantum" brand, named like their other stocks after a famous Indian chief. They lately introduced their "Wampatuck" brand, and this stock has also become well known.

The company makes few stocks rather than many on the theory that such a program prevents confusion and promotes specialization.

The plant is located at South Braintree, about 12 miles from Boston. The buildings are of brick, and the equipment is of the latest type. The plant is made up of three separate manufacturing units, so that the danger from fire is minimized to a great extent. The Monatiquot river, from which the company takes its name, furnishes a soft, pure water, which is an invaluable asset in the processes employed.

Robert C. Harlow, for many years superintendent of the reclaiming plant of the Boston Woven Hose & Rubber Co., is president and general factory manager, while the treasurer, James H. Stedman, is equally well known in the rubber trade. The company maintains sales offices at 176 Federal street, Boston, as well as representations at Akron, Ohio, and Brussels, Belgium.

THE PORTAGE RUBBER COMPANY.

It is authoritatively stated that the profits of the Portage Rubber Co. for the last quarter were more than sufficient to pay the yearly dividend of 7 per cent. on their preferred stock and that there is quite a strong probability that the company will begin dividends on the common stock this year.

FRIGHTFUL DISASTER IN A DETROIT RUBBER COMPANY.

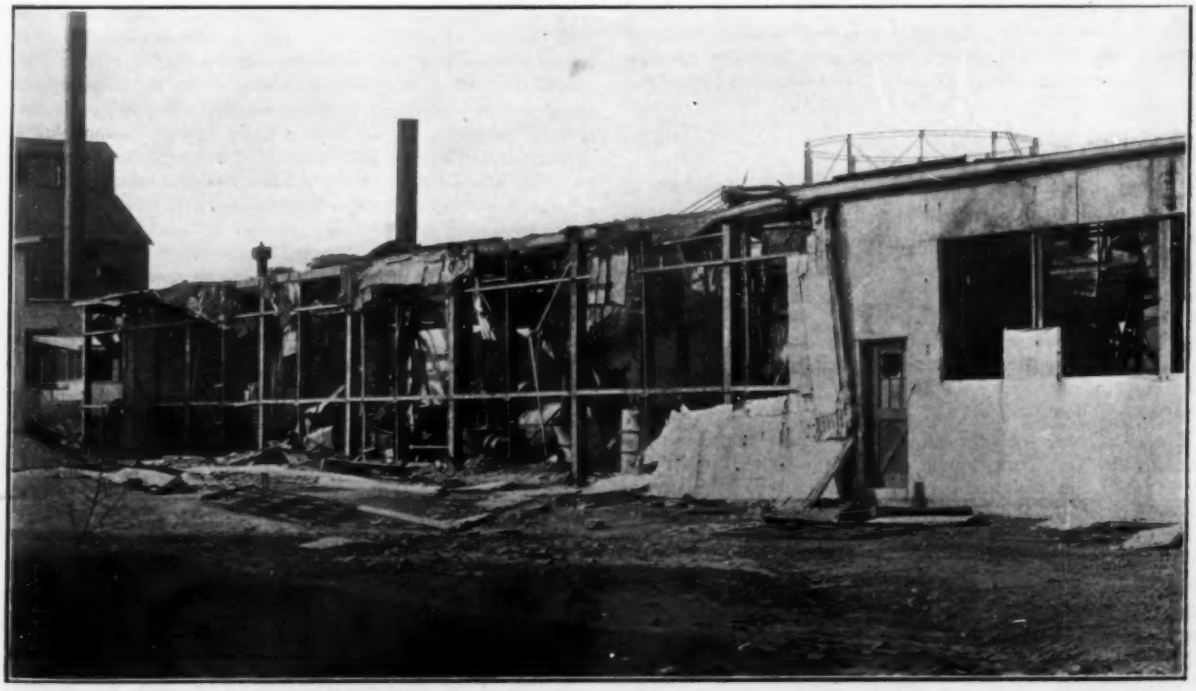
A frightful and fatal disaster occurred on May 15 in the plant of the Mexican Crude Rubber Co., situated on the west side of Detroit, Michigan. An explosion took place in the mixing room, which utterly destroyed that part of the company's works, killed outright ten of the twenty-five workmen employed in that department and injured several others so badly that three more died soon after being removed to the hospital.

The building was a new structure put up about a year ago, of steel and concrete, and one story in height. The concrete walls at this part of the factory were entirely blown out, and in great fragments—some of them weighing several pounds—were scattered over a territory of many blocks, doing considerable damage to adjacent buildings.

Just how the accident occurred will probably never be known, altho the matter is being thoroughly investigated. Some of the surviving workmen say that there was a large vat of molten rubber in the center of the room, but the general manager of the company says it is quite possible that the heat of the sun may have caused an explosion of mixed ether and alcohol. This chemical is contained in iron barrels which are kept sealed when not in use.

The illustration shown below, made from a photograph taken shortly after the explosion especially for this paper, shows the completeness of the ruin, the only part of the wall left standing being the steel frame.

The Mexican Crude Rubber Co. was incorporated eight years ago with a capital of $1,500,000, and a plant erected at Coahuila, Mexico, which later was moved to San Luis Potosi, but owing to the serious interruption of its work by the Mexican war it was moved to Detroit about a year ago. It is engaged in the manufacture of artificial leather by a secret process.



PLANT OF THE MEXICAN CRUDE RUBBER CO. AFTER THE EXPLOSION.

PERSONAL MENTION.

Mr. George B. Hodgman, president of the Hodgman Rubber Co. and also president of the Rubber Club of America, was recently elected a member of the committee on arbitration of the Chamber of Commerce of the State of New York.

Mr. Eugene Hofeller, secretary and treasurer of Theodore Hofeller & Co., well-known scrap rubber and waste material dealers of Buffalo, and Mr. Finnigan, of the Empire Smelting Co., of Depew, New York, have purchased the plant and equipment of the New Columbus Buggy Co., at Columbus, Ohio, and will engage in the manufacture of a full line of electric and gasolene automobiles as well as high grade buggies. Mr. Hofeller will devote only a small part of his time to the new business, continuing his interest in and association with the Hofeller company.

Mr. Hermann Reimers, for many years known by the whole of the American rubber trade as the head of Reimers & Co., New York, but now a partner in the important rubber importing house of Heilbut, Symons & Co., of London, was a visitor to the United States this spring. His tarry was so brief that few of his many friends had an opportunity to see him, much to their regret.

J. A. Mendes, of Pará, the inventor of the Mendes process for smoking Pará rubber, is in New York.

Charles B. Whittlesey, secretary of the Hartford Rubber Works Co., of Hartford, Connecticut, and president of the Hartford Board of Trade, was married about the first of May, at New Britain, to Miss Grace A. Moore.

Mr. Philip Cabot, of White, Weld & Co., of Boston, has been elected a director of the Hood Rubber Co.

H. E. Raymond, second vice-president and sales manager of The B. F. Goodrich Co., has moved his offices from the factory at Akron to New York City, where the president of the company, B. G. Work, has for some time been located. The general direction of all affairs at the plant at Akron is in charge of A. H. Marks, vice-president and manufacturing manager of the concern.

Mr. B. F. Goodsell, the original inventor of Goodsell packings, has, in association with a few other men, incorporated the Goodsell Packing Co., with offices at 31 West Lake street, Chicago, Mr. Goodsell assumes the presidency and management of this new company.

H. C. Ross, formerly Pacific Coast manager for the Knight Tire & Rubber Co., of Canton, Ohio, has been promoted to the position of general sales manager, with headquarters at Canton, to fill the vacancy created by the recent resignation of Ole Hibner, former general sales manager.

P. P. Parker, who in January of this year was appointed eastern district manager of the same company, in charge of its Boston branch, is now assistant sales manager, with headquarters at the factory in Canton. Mr. Parker's experience in charge of the Boston branch especially fits him for his new work of overseeing the company's various United States distributing houses.

Edgar Storms, Jr., who for some time past has been manager of the New York branch of the Ajax-Grieb Rubber Co., of Trenton, has resigned his position with that company, to become president and general manager of the Racine Rubber Tire Co. of New York, Inc., located at Seventh avenue and Fifty-fourth street.

Henry E. Jacoby, of New York, announces the removal on May 1 of his offices to larger quarters at 95 to 97 Liberty street, where he will continue to specialize on chemical machinery and equipment of all kinds, including a much larger line of vacuum drying apparatus.

John L. Gibney, who has been in charge of the New York City branch of the Gibney Tire & Rubber Co., of Conshohocken, Pennsylvania, will in future look after this company's interests among the big truck users and manufacturers, while F. F. Phillips has been appointed to the New York management.

George J. Bates, formerly credit man for a number of years with another large Akron tire company, and for the past year head of the Firestone Tire & Rubber Co.'s pneumatic tire sales department at Akron, is now looking after the company's interests in this particular line among the automobile factories throughout Michigan, with headquarters at the Detroit branch, corner Canfield and Woodward avenues.

MR. WATSON VICE-PRESIDENT OF THE LEE TIRE & RUBBER CO.

Mr. John J. Watson, Jr., well known to the rubber trade because of his former connection with the United States Rubber Co.—of which corporation he was the treasurer for several years—has, together with several other eastern capitalists, become interested in the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania. At the meeting of the company held on May 4 he was elected first vice-president. The board of directors elected at that time include: J. Ellwood Lee, A. A. Garthwaite, John J. Watson, Samuel Wright, H. C. Coleman, M. O'B. Hallowell, Charles Heber Clark, J. Carl De la Cour, H. C. Jones and John M. Dettra. One of the local papers, referring to the advent into the management of the company of this new element, speaks as follows: "In securing Mr. Watson and his associated interests the company has made a great business stroke which will bring it into a stronger and larger position in the rubber manufacturing world. Mr. Watson is a young, active business man of great experience in big enterprises and is one of the best-known men in the rubber trade. The acquisition of Mr. Watson and his associates will bring great strength to the company, which is now doing a very large business and has many orders on hand."

MR. GEORGE B. WILSON.

Mr. George B. Wilson, president and general manager of the Racine Rubber Co., of Racine, Wisconsin—formerly the Kelly-Racine Rubber Co.—has recently been visiting some of his friends in the East. Mr. Wilson assumed his present position with the Racine company a year and a half ago and the prosperous condition of the company today shows the result of his executive ability. Mr. Wilson originated in the East, having lived as a boy in Dedham, Massachusetts, and getting his preliminary education at the Boston Latin School, finishing up at Harvard; whither he goes later in this month to attend the twentieth anniversary of his graduation. For a number of years he was connected with the mining industry in Nevada and Arizona, but about four or five years ago, he went to Racine and became president of the Mitchell-Lewis Motor Co., a position from which he was promoted to the one he now occupies.

A YOUNG BRAZILIAN IN NEW YORK.

A young Brazilian—son of one of the most eminent officials in Para—has recently come to New York with the hope of associating himself with some commercial concern, preferably with some rubber company. He is a good deal of a linguist, speaking English, Spanish, Portuguese, French, Italian and German—which would seem to qualify him very well to act as foreign secretary handling the foreign correspondence of some importing or exporting house. He is quite willing, if such a position should offer, to return to South America as representative for some American company. In fact he is willing to do any work where his qualifications will make him particularly useful. He is well educated, has had some experience in banking and commercial affairs, has traveled extensively, is well vouched for both in New York and in Para, and ought to fit into some American commercial organization. This office will be very glad to furnish his address.

THE U. S. TIRE CO. ESTABLISHES NEW AGENCIES.

Through John B. Tower, head of the export department, who has recently returned from an extended trip to Jamaica, Panama, Porto Rico and other southern points, the United States Tire Co. has established new agencies at Kingston (Jamaica) and Panama. Henrique Bros., owners of the Industrial Garage, were appointed agents in the former city, and Smallwood Bros., proprietors of the Pan-American Automobile & Supply Co., received a similar appointment in Panama. Mr. Tower reports excellent business in every district he visited, the distributors of tires in those sections being steady, consistent and enthusiastic advertisers. He states that in Kingston, where the smaller and lighter weight cars predominate, as well as in Panama and Porto Rico, where the larger and heavier styles are preferred and where anti-skids are used almost entirely, the "Nobby Tread" has become extremely popular. This company is represented in Porto Rico by the firm of Pietrantoni & Sojo, whose headquarters are at San Juan and who have sub-agencies at Ponce, Guayama, Mayaguez, Arecibo, Aguadilla, San Sebastian and Humacao.

ADDITIONS TO THE VICTOR-BALATA PLANT AT EASTON.

The Victor-Balata & Textile Belting Co., manufacturers of Victor-Balata, Canvas Stitched, Keystone Hair and other beltings —whose office and salesrooms are at 51 Beekman street, New York—has recently completed an addition to its plant at Easton, Pennsylvania, increasing by one-half the area occupied. This new addition, like the other buildings, is of steel and concrete; the machinery is of special design and most modern and heavy construction, and the lighting and heating arrangements, as well as all appliances and appurtenances, are of the highest character. Victor-Balata was formerly imported into this country through American agents, but the added costs and the delays thereby entailed were such as to lead to the erection of the present extensive plant.

CHANGES IN TIRE PRICES.

Following the general reduction in tire prices not long ago prophecies were made of an increase being necessitated when the demand for tires for summer travel should really set in. While this prophecy has not yet been fulfilled, some price changes are taking place, the first to be noted being an increase of about 2 per cent. on two sizes of tires made by the Fisk Rubber Co., and the second a reduction of about 5 per cent. in the price of the Goodyear Tire & Rubber Co.'s individual block motor truck tires, bringing the price of this type of tire down to the same figure at which the endless variety may be purchased. The Goodyear company explains this reduction in price by the statement that the enlarged volume of production necessitated by the constantly increasing demand for this particular type of tire has lowered the cost to an extent sufficient to warrant the decrease in selling price.

KELLY-SPRINGFIELD REFINANCING PLAN ADOPTED.

The special meeting of the stockholders of the Kelly-Springfield Tire Co. of May 4 resulted in the adoption of a refinancing plan. This plan calls for an increase of the capital stock of the company from $5,149,500 to double that amount, or $10,299,000. The former capital stock was divided between: 4 per cent. income debenture bonds due April 1, 1915, amounting to $2,850,500; 6 per cent. cumulative preferred stock—upon which arrears of dividends amount to 78½ per cent.—to the amount of $1,149,500, and common stock to the value of $4,000,000. By the new arrangement the capital stock is divided between: 6 per cent. cumulative preferred stock amounting to $4,239,200; 7 per cent. cumulative second preferred stock to the amount of $1,029,900 (which represents the 78½ per cent. back dividends), and common stock to the value of $5,029,900. The following directors were re-elected: Van A. Cartmell, F. A. Seaman, Austin Poole, Stephen Peabody, Gustave Maas, A. J. Scheuer and J. Oppenheim.

TRADE NEWS NOTES.

A new concern—the Franco-American Rubber Co.—has been incorporated in Delaware, with a capital stock of $5,000,000 to engage in the manufacture of machinery and processes for extracting rubber from trees and vines and purifying and cleansing the extracted product. The incorporators are F. D. Buck, George W. Dillman and M. L. Horty, all of Wilmington.

Gutta Percha & Rubber, Limited, whose factories and principal offices are located in Toronto, Ontario, intend very soon to erect a warehouse building at Regina, Saskatchewan, and to establish a permanent branch in that city, where a small stock is now carried. A plot of ground on Broad street has been purchased for this purpose and the proposed warehouse will be three or four stories high and cost in the neighborhood of $30,000. This company already has branches at Halifax, Montreal, Winnipeg, Calgary and Vancouver, Canada, and at Sydney and Melbourne, Australia.

The Kingston Rubber Brush Co. has removed from its former location at Kingston, New York, to 6102 Market street, Philadelphia.

The Buffalo Foundry & Machine Co., of Buffalo, New York, announce the termination of the arrangement whereby H. E. Jacoby has been representing them in New York City and vicinity. They are now handling direct all inquiries covering vacuum apparatus, castings, patterns and machine work.

The partnership of Eggers Bros. & Pounds, crude rubber importers, 16 Exchange place, New York, has been dissolved and the business formerly conducted by Alfred and Ludwig Eggers and W. S. Pounds under that partnership has been transferred to Dunbar & Co., of 290 Broadway, incorporated April 25 with an authorized capital stock of $200,000 to deal in crude rubber and allied products.

A complete line of Dreadnaught tires and tubes—including an anti-skid cover and a patented vacuum tread—has been placed on the market by the Dreadnaught Tire & Rubber Co. from its factory at Baltimore which has been under construction for the past year and is now in full operation. This factory, which is under the management of Walter Dunbar, is within easy distance of the water front and enjoys excellent shipping facilities. Agencies for this tire are said to have already been established in a number of the larger cities.

At a meeting of the board of directors of the McGraw Tire & Rubber Co., held on May 1, action was taken to provide for the increase of the capital stock of the company from $1,000,000 to $1,500,000. F. B. Squire has been elected to the board of directors, to succeed R. F. Taggart, retired. President E. C. McGraw estimates that the 1914 business of the company will amount to between $4,000,000 and $5,000,000, the plant now being in operation day and night with a force of 600 at work.

A residence at Henshaw Park—a suburb of Worcester, Massachusetts—now being erected for J. E. Girouard of that place, is to have an entire asbestos roof.

Work was begun about the middle of May installing machinery in the factory of the C. H. Stoddard Rubber Tire Co., on Howe avenue, Millbury, Massachusetts, and it is expected that operations will commence in the new building soon after June 1.

RUBBER COMPANY DIVIDEND.

The Boston Woven Hose & Rubber Co. has declared a regular quarterly dividend of 3 per cent. on its common stock and a regular semi-annual dividend of 3 per cent. on its preferred stock—payable June 15 to stockholders of record on June 10.

The Plymouth Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on its preferred stock, payable June 1.

AUTOMOBILE CLUBS AS RUBBER RETAILERS.

A catalog recently issued by one of the leading automobile clubs, shows almost a full line of automobile supplies. It contains nearly all the rubber goods used by the motorists. Over one hundred and fifty different rubber articles are listed.

No tires are shown or quoted, but there are several types of tire gages, pumps and covers. There are four kinds of brake lining; several rubber pedal grips and rubber mats; rubber seat and top covers; lamp covers and window cleaners; gas bags for lamps, rubber lamp connections; braided tubing and red rubber tubing, and horns and bulbs of all sorts. There are shown gasolene tubing, pump tubings, radiator hose, channel and dash rubber; spring rubber bumpers, washers and rubber packing in variety.

The ignition and lighting systems are provided for with lighting cables of all kinds; lamp cord and dual lamp cord; three kinds of armored cable; half a dozen kinds of braided cable and four kinds of imported rubber cable; high tension magnetos, high tension secondary and ignition cables, and two and four-strand low tension primary cables.

To provide for blow-outs there are various tire fillers, rubber cements, patches and tire bands; and for inner tubes there are blow-out patches and testing tanks. For more serious blow-outs on the road, there are complete vulcanizing outfits for repairing casings and inner tubes. These outfits include three types of portable electric vulcanizers and four portable steam vulcanizers. Several types of garage steam vulcanizers and garage electric vulcanizers are shown. Paints of pure rubber for tires and rubber mats are recommended. To prevent skidding seven types of chains are listed; also studded grips for treads and grips for solid tires. Rubber sleeves and rubber aprons for the hostler are also catalogued. For the motorist there are rubber goggles and goggles with rubber covered temples; rain coats of double texture, auto rubber shirts, and linen dusters.

RECORD AUTO SHIPMENTS FOR MARCH.

Figures compiled by the Detroit freight and traffic office of the National Automobile Chamber of Commerce, Inc., show that during the month of March shipments of automobiles in the western district included more than 60,000 cars, for which 13,510 freight cars were required. Alfred Reeves, general manager of the N. A. C. C., has recently returned from a visit to 41 of the automobile plants in Ohio, Michigan, Indiana and New York, and his report indicates that the companies are apparently all in excellent condition, with production far behind the demand. He states that while the extraordinary demand for moderate priced cars continues, there is a sustained and increasing demand for higher priced machines, and that in Detroit alone there are now 114 factories producing automobiles or parts, of which 35 are making pleasure cars or trucks complete.

THE NATIONAL MANUFACTURERS IN CONVENTION.

At the Nineteenth Annual Convention of the National Association of Manufacturers, held on May 19 and 20 at the Waldorf-Astoria Hotel, New York, many topics of general interest were discussed. Resolutions were adopted favoring the recommendation of the association's Committee on Patents, which advocated the creation of a court of patent appeals and the erection of a new building for the Governement Patent Office. Another resolution endorsed the bill now pending in the House of Representatives, known as "The Oldfield Design Registration Bill," to provide legal protection for the original designs for manufactured products. An interesting address was delivered during the convention by Manuel Gonzales Zeledon, Consul General for Costa Rica in New York, on "Central America as a Field for the American Manufacturer."

REVERE RUBBER CO. ANNUAL REPORT.

The report of the Revere Rubber Co., filed with the Secretary of State of Massachusetts, showed assets on December 31 last amounting to $7,314,778, of which real estate and machinery represented a value of $2,449,255, material—stock in process—$2,730,531 and investments $148,471, while cash and debts receivable are placed at $1,867,827 and deferred accounts at $118,693. The liabilities of the company, in addition to the capital stock of $4,000,000, include accounts and bills payable to the amount of $1,927,868, deferred and surplus accounts $15,111 and a profit and loss surplus of $1,371,798.

PLANT EXTENSION BY DAYTON RUBBER MANUFACTURING CO.

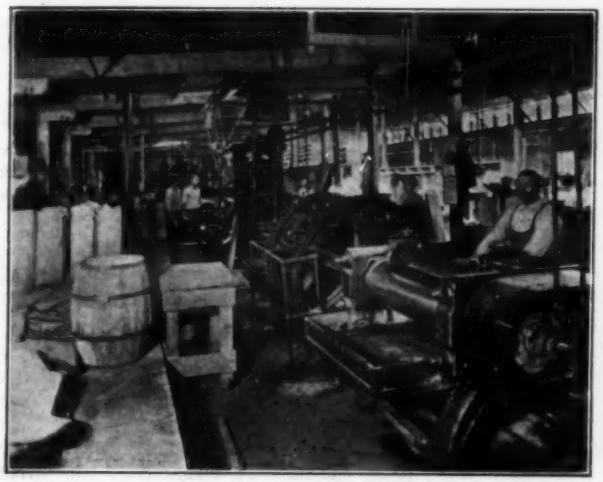
The Dayton Rubber Manufacturing Co., of Dayton, Ohio, whose increase in capitalization was mentioned in the April number of THE INDIA RUBBER WORLD, has in contemplation the erection of a new factory building 500 x 75 feet in area and three stories high. This company made its first tire for motor fire apparatus in August, 1911, and now its tires are said to be in use as a part of the motor fire, ambulance and patrol apparatus of more than 400 cities in the United States and Canada, the increasing demand necessitating the erection of this addition to the plant.

THE INSIDE OF A COMPREHENSIVE RUBBER MILL.

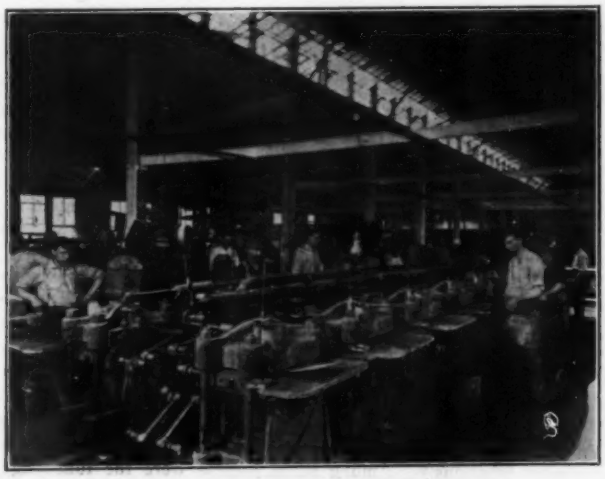
OUTSIDE views of rubber factories are often imposing because of the magnitude of some of these great American plants, but inside views are what really show the interesting phases of the industry. Here are seven interior views taken in different departments of the Pennsylvania Rubber Co. plant at Jeannette, Pennsylvania. These views—which are exceptionally sharp and distinct in detail for pictures of this size—not only give something of an idea of the work done in the different rooms of this big plant, but show the wide variety of manufacture carried on by this company. The first view shows the milling room—which is very much the same in all rubber plants—where the crude rubber is mixed with various compounds. The

VIEW ALONG MILL LINE.

second view shows the calender room, which is also about the same in general character in all rubber factories. Number three shows a corner of the molding room, where the presses are at work on small molded goods. Four and five show the building up of bicycle and automobile tires, while six and seven give glimpses of the department devoted to the manufacture of tennis balls.



VIEW ALONG CALENDER LINE.



SHOWING PRESSES FOR SMALL MOLDED GOODS.

BICYCLE TIRE BUILDING ROOM.

AUTOMOBILE TIRE BUILDING ROOM.

CUTTING STOCK AND BUILDING CENTERS FOR HANDMADE CHAMPIONSHIP TENNIS BALLS.

PUNCHING OUT FELT COVERS AND SEWING HANDMADE CHAMPIONSHIP TENNIS BALLS.

MR. MACKINTOSH DINES HIS FRIENDS.

MR. W. M. MACKINTOSH, who has been in this country for the past year installing his process of waterproofing fabrics in some American plants which have adopted his system, sailed for his home in Scotland on May 26, and on the evening preceding his sailing he gave a dinner at the Park Avenue Hotel to about thirty of his social and business friends, including particularly those who have been associated with him in his work in this country.

It was an informal dinner and thoroughly enjoyable from every standpoint. Mr. John Lunn acted as president for the occasion and introduced a number of speakers who delivered happy, tho altogether impromptu, addresses of congratulation on what Mr. Mackintosh had accomplished and of good wishes for a pleasant voyage and his future generally. Among those who spoke were F. S. Bennett, F. D. Wynn, L. M. Himebaugh, M. W. Kempner and Mr. Gillespie. Mr. Mackintosh responded most felicitously. Among those present were the following:

Mr. and Mrs. John Lunn, Mr. and Mrs. M. W. Kempner, Mr. and Mrs. Jas. Brotherton, Mr. and Mrs. Pritchard, Mr. and Mrs. F. D. Wynn, Mr. and Mrs. L. M. Himebaugh, Mr. McQueen McIntosh and sister, Mr. W. B. McIntosh, Mr. and Mrs. Albert Berry, Mr. Berry, Jr., Mr. and Mrs. E. A. Hoey, Mr. C. E. Rowe, Mr. F. S. Bennett, Mr. and Mrs. Gillespie, Mr. T. B. Coughlin, Mr. Wm. A. Rowley, Mr. Wm. M. Morse, Mr. F. B. Dobbin.

NEW INCORPORATIONS.

Arco Rubber Co., April 25, 1914; under the laws of Maine; authorized capital, $10,000. Incorporators: L. D. Apsley (president), Hudson, Massachusetts; William E. Tucker (treasurer), Chelsea, Massachusetts, and David W. Snow, Portland, Maine. To manufacture and deal in rubber goods of all kinds.

Ashley Wire Wheel & Rim Co., Inc., May 11, 1914; under the laws of New York; authorized capital, $50,000. Incorporators: Frank Oberkirch and Robert W. Ashley—both of 47 West Thirty-fourth street—and Henry L. Stuart, Hotel Waldorf-Astoria—all in New York City.

Bigger Rubber Preservative Co., Inc., May 11, 1914; under the laws of New York; authorized capital, $10,000. Incorporators: A. Frank Bigger, Wm. J. Conners and Walter F. Hocheins—all of Buffalo, New York. To treat rubber by "Bigger process."

Clinton Raincoat Co., Inc., April 24, 1914; under the laws of New York; authorized capital, $2,000. Incorporators: Harry Stern and Rose Stern—both of 949 Fox street—and Abr. Polacoff, 967 Kelly street—all in New York City. To manufacture rubber and waterproof clothing, etc.

Davies Tire & Supply Co., March 7, 1914; under the laws of Washington; authorized capital, $10,000. Incorporators: Marcus C. Davies, Kate M. Davies and Guy L. Hicks. To deal in automobiles and automobile supplies. Principal place of business, Tacoma, Washington.

Doherty Rubber Works, Inc., Eugene, April 27, 1914; under the laws of New York; authorized capital, $40,000. Incorporators: Philip A. Doherty, 594 Bedford avenue; Mary J. Doherty, 87 North Ninth street—both in Brooklyn, New York—and Clinton T. Roe, Eighteenth street, Whitestone, Queens, New York. To manufacture dental and stamp rubber.

Forbes Rubber Co., Inc., May 11, 1914; under the laws of New York; authorized capital, $10,000. Incorporators: Thomas P. C. Forbes, Jr., Geo. V. Sloat and Anna S. Sloat—all of Freeport, New York. Tires, rubber goods, etc.

Franco-American Rubber Cloth Co., Inc., May 11, 1914; under the laws of New York; authorized capital, $10,000. Incorporators: Harry Goldstein, 601 East One Hundred and Thirty-eighth street; Sam Goldstein, 1690 Prospect Place, and Henry L. Sperling, 755 Beck street—all in New York City.

Franco-American Rubber Co., May 5, 1914; under the laws of Delaware; authorized capital, $5,000,000. Incorporators: F. D. Buck, Geo. W. Dillman and M. L. Horty—all of Wilmington, Delaware. To manufacture machinery and processes to extract rubber of certain shrubs, vines and barks and for the purification and cleansing of same.

Gotham Rubber Co., Inc., May 11, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: Chas. Meyers, Emile Dreyfus and Sadie Barfield—all of 62 William street, New York City. Rubber goods, etc.

Great Western Rubber Works, The, April 7, 1914; under the laws of Indiana; authorized capital, $50,000 ($10,000 preferred, $40,000 common). Incorporators: Edgar P. Denison, Richmond, Indiana; Guy D. Doremus and Floyd C. Miller, Kalamazoo, Michigan; James C. Burdette, Chicago, Illinois, and Paul H. Doremus, South Bend, Indiana. To manufacture and reclaim rubber from old rubber known as "reclaimed rubber"; to manufacture rubber goods or rubber articles of all description from new and reclaimed rubber, etc.

H. U. H. Tire Co., April 23, 1914; under the laws of New Jersey; authorized capital, $5,000. Incorporators: Samuel D. Holzman and Rosaline Holzman—both of 78 Court street—and Louis Umstaedter, 140 Ridgewood avenue—all in Newark, New Jersey. To manufacture, buy, sell, import and export, etc., all kinds of automobiles, automobile accessories, etc.

Improved Belting Co., Inc., The, May 6, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: John J. Lenahan, Jason N. Whitcomb and Henry W. Willis—all of Buffalo, New York. Belting, rubber goods, etc.

Minor Rubber Co., April 6, 1914; under the laws of New Jersey; authorized capital, $12,000. Incorporators: Wilfred C. Minor, 42 State street, Albany, New York; Noyes E. Alling, Bridgeport, Connecticut, and Charles W. Humphreys, 841 Broad street, Newark, New Jersey. To carry on a wholesale and retail rubber goods and general merchandise business, etc.

Orawaupum Tire & Repair Co., Inc., May 1, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: Ronald J. Rennie, Purchase, New York; Nellie M. Gidley, White Plains, New York, and John J. Hayde, 469 East One Hundred and Eighty-fifth street, New York City.

Rubber Tire Accessories Co., Inc., May 2, 1914; under the laws of New York; authorized capital, $10,000. Incorporators: Owen Earhart, 28 West Sixty-third street; Thomas J. Nugent, World Building, and Samuel K. Ellenbogen, 30 Church street—all in New York City.

Semple Rubber Co., February 21, 1914; under the laws of New Jersey; authorized capital, $125,000. Incorporators: Charles H. Semple, Trenton, New Jersey; Fillmore A. Drake and Robert H. La Porte—both of Philadelphia, Pennsylvania. To buy, sell, import and generally deal in rubber, tires, etc.

A. C. Squires Rubber Co., May 12, 1914; under the laws of New Jersey; authorized capital, $150,000. Incorporators: Arthur C. Squires, Cecil S. Ackerson and Albert E. Sculthorp—all of Keyport, New Jersey. To manufacture, import, export, buy, sell and otherwise deal in crude rubber, rubber clothing, etc.

Venezuela Chicle Corporation, April 25, 1914; under the laws of New York; authorized capital, $50,000. Incorporators: Edward Maurer and Raphael Eskenazi—both of 80 Maiden Lane—and Julian A. Arroyo, 82 Wall street—all in New York City.

Weathersilk Sales Co., May 12, 1914; under the laws of New Jersey; authorized capital, $100,000. Incorporators: Percy Carter Bell, Millburn; Hobart L. Benedict and Amelia J. Meyer, both of 109 Broad street, Elizabeth—all in New Jersey. To buy, sell, import and deal in waterproof coats, cloaks, etc.

New Rubber Goods in the Market.

A BALMACAAN RAINCOAT.

THE balmacaan style of coat, in all materials, is without doubt the most popular fad in wearing apparel at the present moment, and the manufacturers of rainproof garments have not been slow to take advantage of the opportunity this fad affords of bringing out a new style in waterproof coats. The coat shown in the illustration herewith is a balmacaan model, loose fitting, with extra deep arm-scye, convertible collar and slit pockets. It is made both in cravenette and mackintosh materials. [Hodgman Rubber Co., 806-808 Broadway, New York.]

HODGMAN BALMACAAN.

COMBINATION ICE BAG, WATER BOTTLE AND FOUNTAIN SYRINGE.

Economy of space is one of the desirable results attained in the design of a recently patented invention by which an ordinary wide-mouth rubber container with an internal-threaded collar secured to its edge may be utilized for any of the three purposes above mentioned. This variety of uses is effected by a combination plug comprising a body having a pair of flat faces from each of which extends a threaded shank. One of these shanks has a central bore which extends through the body and also through a nipple on the side of the body opposite the shank, this nipple being intended for the connection of an ordinary form of rubber hose—thus converting the bag into a fountain syringe. When not desired for this use, the plug may be unscrewed and the shank on the other side of it screwed into the same opening and the rubber hose removed. [Patent No. 1,079,203, November 18, 1913.]

LABORATORY WASH BOTTLE.

The accompanying sketch shows an inexpensive way in which a continuous flow laboratory wash bottle may be constructed, and by the use of which the old practice of placing a tube in the mouth in order to operate the wash bottle may be done away with. This apparatus calls for the use of a three-hole rubber stopper, a slit rubber tube and a rubber bulb, as well as a glass rod and glass tubing, in the arrangement suggested by the drawing. Simultaneous pressure of the bulb and of the finger on the relief tube creates a pressure within the bottle which will cause the liquid to flow through the spout. When the finger is removed from the relief tube the flow of liquid is instantly shut off.

A MOTORCYCLE PANNIER AND CARRYALL.

A new device which calls for the use of waterproofed canvas is now being offered the tourist and others. It consists of a pair of pannier bags, 16 x 14 x 4 inches in size, designed for attachment, by an arrangement of straps, to the luggage carrier of a motorcycle. The weight of the panniers is only 1¼ pounds, and their usefulness is not confined to the tourist, being equally suitable for salesmen, messengers or postmen on rural routes. [New York Sporting Goods Co., 15-17 Warren street, New York.]

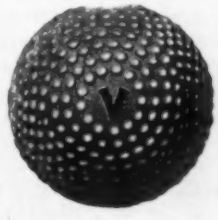
THE "SANI-MASSEUR."

The "Sani-Masseur," a photograph of which is reproduced below, in addition to performing the usual offices of the ordinary massage device, at the same time applies a soothing cream and vacuum cleans the skin. As indicated by the illustration, the device consists of a rubber brush, each bristle of which is made in the form of a hollow tube.

There are 240 of these rubber bristles, of various sizes, and descriptive circulars sent out by the manufacturers state that "Its 240 vacuum 'fingers' will 'vacuum' away your wrinkles, pimples, blackheads and enlarged pores." Each "Masseur" is supplied with an attached tube of face cream, a slight pressure on the end of the tube being sufficient to squeeze enough cream through a hole near the center of the brush for one application, and after use it may be cleansed with hot water. [Fleur-de-Lis Specialty Co., 32 South Wabash avenue, Chicago.]

THE DUNLOP "V" GOLF BALL.

A new golf ball, made under a patent vacuum process which extracts all air from the ball during the operation of molding, which is said to render it more homogeneous—the shell and the core becoming practically one mass and making splitting and loosening of the shell impossible—has just been placed on the market. The manufacturers claim for it that it is the most perfectly spherical ball yet made, and that it will positively retain its shape, their contention being that by using a thin and highly resilient cover with a tightly wound core both the hard hitter and his less muscular rival get full value for their shots, whereas in the case of the ordinary ball—wound very tight and covered with a more or less hard shell, so that it will not "squab" or flatten on the face of the club—it is only the man of superior strength who can hit hard enough to compel the cover to give sufficiently to obtain the benefit of the elasticity of the rubber core. [The Dunlop Rubber Company, Ltd., Birmingham, England.]

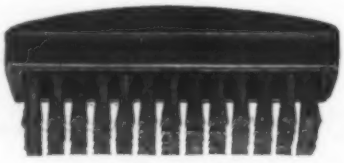


RUNNING BOARD WITH RUBBER STRIP.

The Upton Safety Step, as here illustrated, is now being offered to the motoring public and will probably contribute largely to individual safety and comfort, being designed to prevent the foot from slipping on the running board of the automobile. The device consists of a circular strip of red rubber set into a groove formed in the edge of an aluminum or other metal step. Aside from its practical value as a preventive against accidents, the red rubber strip—which may be renewed when it becomes worn—adds an attractive finish to the step.

THE NEW RUBBERSET NAIL BRUSH.

A Rubberset Sanitary Nail Brush, as illustrated below, is the latest achievement of the makers of the famous Rubberset shaving, tooth and paint brushes. The bristles of this brush are stiff and thick, specially selected so that they will not soften from usage or constant immersion in water, and each tuft of bristles is firmly gripped in its hard rubber base, eliminating all possibility of the individual bristles becoming loose. Another feature of this nail brush is that the handle is made of hard wood and water-proofed, so that it may even be subjected to boiling water without danger of injury to either base or bristles. [Rubberset Company, Newark, New Jersey.]

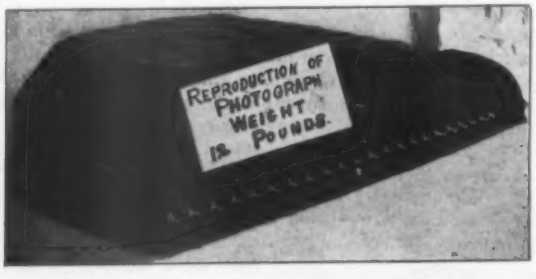


A RUBBER BLOWER FOR ANTISEPTIC POWDER.

A preparation now on the market for the relief of sufferers from colds, catarrh, hay fever, influenza, bronchitis and all kindred and similar maladies, depends largely for its success on a rubber bulb or powder blower. The preparation consists of an antiseptic powder composed of mineral salts, to be used in sterilization of the mucous membrane of the nose and post-nasal cavity. This is effected by means of the rubber blower, in the manner illustrated. The rubber bulb is pressed flat, the tip inserted in the powder and the pressure suddenly released, when it will be found that a quantity of the powder has been sucked up into the bulb. The blower is held at a little distance below the face and the powder, a thin cloud of which is made by pressing the bulb sharply in quick succession, is inhaled. Then in a similar manner the powder should be inhaled through the mouth and exhaled through the nose. [Maignen Chemical Company, 1311 Arch street, Philadelphia.]

THE "COMPACT" PNEUMATIC CAMP BED.

The cut below shows the Whall Compact Pneumatic Camp Bed, an accessory which especially commends itself to the camper because of its light weight (it weighs only 12 pounds) and because of its imperviousness to both wind and water. The outside covering is made of 12-ounce brown waterproof duck, with a fullness of 68 inches over the shoulders and of 30 inches at the feet, allowing ample room for bags and blankets. It



opens at the front, almost the entire length of the bed, permitting of airing as well as arrangement of the bedding. The air sack—made of rubber stock under the company's Longitudinal Stay Device patent, which confines the air in sections—is the width of the bed and 48 inches long. This air sack is in a boxed pocket, the bottom and sides of which are made of waterproof duck to keep the moisture of the ground from reaching the air sack. Tubes for inflation and valve connection are furnished with each camp bed. This "Compact" bed retains many of the features of the better-known "Comfort" Sleeping Bag made by the same concern, but it is lighter in weight and less expensive. [Metropolitan Air Goods Co., Reading, Massachusetts.]

INSULATED WIRE AND CABLES.

An interesting lecture was lately delivered before an industrial school in Boston by W. I. Middleton, electrical engineer of the Simplex Wire & Cable Co., Boston, upon the manufacture and testing of insulated wire and cables. His talk was more or less informal, and was illustrated by slides showing the machinery and apparatus used in the above operations. The entire process was followed, from the tinning of the copper wire to prevent any action of the free sulphur in the rubber compound on the copper, to the completed aerial, underground or submarine cables.

In dealing with the subject the manufacture of rubber compounds was first taken up, the machinery for handling the raw rubber being shown by slides at its various stages of operation, the necessity being emphasized of preventing foreign substances from getting into the compound and thus spoiling it as an insulator.

The lecture was likewise illustrated by a number of pictures which showed among other subjects the tubing machines and the large vulcanizing drums, while the process of vulcanization was likewise explained. Other features described were the braiders, the waterproofing and finishing of braids, and the various ways of laying up copper strand and multiple conductor cables, as well as the lead covering process and the armoring of submarine cables.

In order to make the completed cable free from defects, the rubber-covered wire should be carefully tested as it passes through the various operations. The views exhibited included those of the different testing sets for insulation resistance and capacity, as well as the generator and transformer sets for voltage tests from 500 to 110,000 volts. The large tanks necessary for submerging great quantities of wire at the same time were also represented.

An important point urged by Mr. Middleton was the desirability of uniform specifications on insulation, which subject had lately been reported upon by the Joint Rubber Insulation Committee, and their report reprinted by the Simplex company.

CENSUS STATISTICS OF COTTON GOODS PRODUCTION.

In the issue of March last the varieties and uses of cotton were dealt with, as well as the principal statistical facts affecting the production of the staple. An interesting sequel to this article is the Census bulletin of textile manufactures, in which cotton goods, as recorded for the census of 1909 (the latest return available), hold the leading place:

	Total.	Cotton.	Wool.	Silk.	Flax, etc.	Dyeing, etc.
Textile establishments in United States	5,352	2,698	1,124	852	252	426
Capital (millions of dollars)	1,841	986	506	152	83	114
Products, 1909 (millions of dollars)	1,685	829	507	197	68	84
Primary horse power	2,099,050	1,400,226	400,762	97,947	92,369	107,746

Including hosiery and knit fabrics, cotton goods had thus slightly over 50 per cent. of the establishments in the combined textile industries, while the capital and value of products were in about the same proportion. The amount of primary horse power used was about 70 per cent. of the aggregate employed in the textile industry generally, the larger amount of mechanical force required for the operation of a cotton mill being thus indicated.

The special statistics relating to the cotton industry show that the consumption of raw material by that branch was as follows:

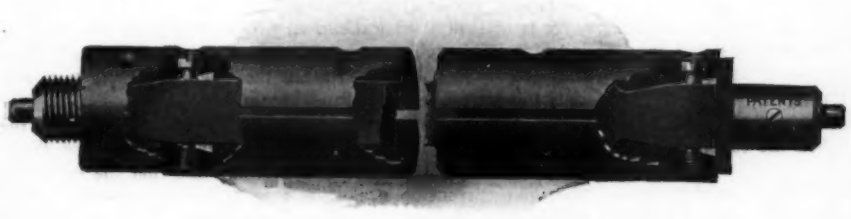
CONSUMPTION OF COTTON BY COTTON MANUFACTURING INDUSTRY.

	1899.	1909.
Cotton goods ..... *pounds*	1,817,643,390	2,332,262,630
Cotton small wares	3,640,878	3,082,270
Hosiery and knit goods	49,451,301	75,416,023
Total pounds	1,870,735,569	2,410,760,923

New Machines and Appliances.

COLLAPSIBLE REWINDING SHAFT.

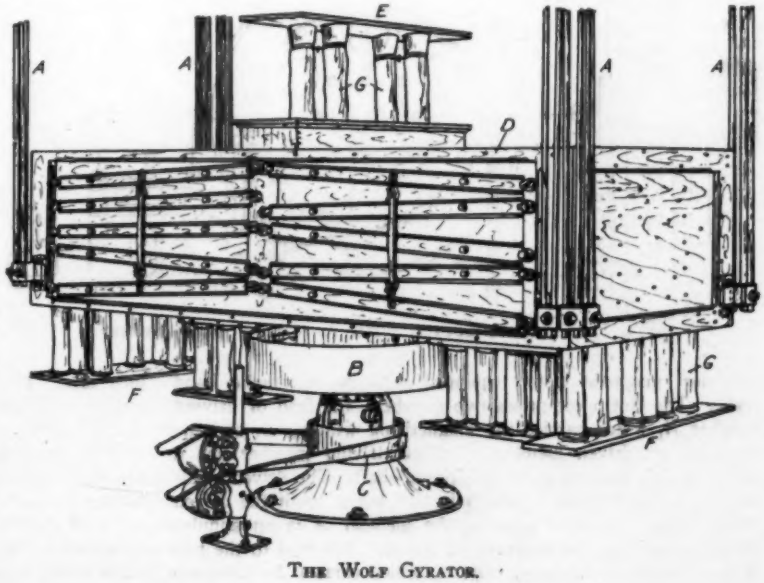
THE average workman in a rubber mill is accustomed to handling machinery and apparatus which is very strong in construction and not in any sense fragile. This applies to all parts of rubber machinery. A collapsible rewinding shaft, or expansion shaft, as it is sometimes called, must present at least two important features to be at all practical; it must be simple to operate and it must be durable. In order to provide such a device, one company has introduced a shaft of simple design, but of strong construction, to be used primarily in connection with slitting and rewinding machinery. The shaft has been tested under varying conditions during the past year, with results which seem to have proven satisfactory in every respect. The illustration herewith shows the construction of the shaft. It is worth noting that its only movable part is a core bar which runs through the center throughout the entire length of the shaft. The shaft is operated by backing off the nut on the threaded end, which causes it to collapse. Returning the nut to its working position expands the shaft. The device can be used in connection with all types of centre-wind machines as well as drum or surface-wind machines, or where the shaft is required to be removed from the roll. [Cameron Machine Co., Brooklyn, New York.]



CAMERON COLLAPSIBLE REWINDING SHAFT.

THE GYRATOR SIFTING MACHINE.

The type of machine employed in the majority of rubber factories for sifting compounding ingredients embodies a rotary brush revolving in contact with a screen. The accompanying illustration shows an entirely different type of sifter, a machine which has been used for years in flour mills and in other industries for sifting materials of a similar nature, and which has recently been introduced in several rubber factories for sifting compounding ingredients in either large or small quantities. Referring to the illustration, the sieve case is suspended from the ceiling by four groups of wooden hangers *A* and is actuated by a single eccentric balance flywheel *B*. The spindle supporting the flywheel runs in a reservoir of oil and the journal boxes are so arranged as to prevent the accumulation of grease and dirt about the machine. The bearings of the eccentric box in the flywheel are adjustable from the rim of the wheel. When the mechanism is set in motion by some outside source of power transmitted to the belt pulley *C*, the sieve box *D* is given a combined reciprocating and gyratory motion, which keeps the materials to be sifted in constant agitation above the screens and facilitates the sifting. The swing of the box is counterbalanced by weights properly adjusted in the flywheel and a perfect running balance is secured. The sieves, of which there may be any desired number in each box, are independent of each other and the screens are removable at any time while the machine is standing or in operation. The material is placed in a hopper above the board *E* and falls out, after passing through the screens, into receivers placed under the boards *F*. The flexible wooden hangers *A* and the tubular fabric chutes *G* allow a free, gyratory motion of the machine. [The Wolf Co., Chambersburg, Pennsylvania.]



THE WOLF GYRATOR.

A NEW HOSE CLAMP.

It has hitherto been a matter of considerable difficulty to effect a hose connection at the same time tight and durable. This trouble has increased with the degree of pressure to which the hose has been subjected.

The extent to which compressed air and gases at high pressure are now used has led to a demand for a hose clamp thoroughly serviceable in the above-named respects, permitting of connections hitherto unattainable being made, and replacing cone-couplings. This object has been effected by the "Hercules" clamp in two parts, made by H. Schubart & Co., Cassel, Germany, shown by the accompanying illustration. This permits of a uniform radial pressure from four sides at the point of connection.

The "Hercules" clamp has been known to resist a pressure of 300 atmospheres (4,416 pounds per square inch), while the use of a second clamp made it possible to increase the pressure 50 per cent.

THE MAGNETIC CLUTCH AS A SAFETY DEVICE.

The hazard assumed by workmen engaged at and about rubber mixing rolls, washers, crackers, calenders, etc., has long been recognized, and many devices have been developed and installed for the purpose of making it possible to shut down the machinery promptly in case of accident. The most recent safety appliance to be used on rubber machinery is the magnetic clutch, but even these devices were introduced several years ago. The latest type of magnetic clutch embodies not only a means of coupling the driving shaft to the driven member, but, in addition, includes an automatic brake, which is applied when the current is interrupted either intentionally or by accident. Magnetic couplings or clutches require but little space along the shaft, are made up of few parts and have perfect running balance. They have no links or other parts which are liable to breakage or sticking, and do not throw grease or dirt. In fact only two criticisms had ever been made on early installations.

One objection was that the time lag between the opening of the operating coil circuit and the releasing of the coupling varied, being so small as to be practically negligible when the couplings were fully loaded, but large when the couplings were operating under light load conditions.

The second objection was that they were not adapted to reaccelerate the load after the machinery had been shut down by their disengagement, for the reason that they were not made to engage gradually, but took hold almost as suddenly as a jaw coupling.

The first objection appears to have first been recognized by Mr. Myers, chief engineer of the Firestone Tire & Rubber Co., who suggested the installation of an automatic band brake on the mill side of the cut-off couplings. The second has been overcome by the design of a new form of magnetic clutch which is adapted for gradual acceleration.

This type of safety device has been developed by the Cutler-Hammer Clutch Co., of Milwaukee, which concern has been very active during the past two years, co-operating with the superintendents of various rubber factories, in installing magnetic clutch safety devices, and in making exhaustive tests to prove their contentions. In this article we will first describe the clutch and magnetic brake referred to above, and then give the results of some actual tests made with the apparatus.

Fig. 1 shows a cross section and a side elevation of the Cutler-Hammer magnetic clutch equipped with an automatic band brake. The clutch comprises two members, the field or driving member *A*, which carries the magnetizing winding *B*, and the armature or driven member *C*. The driving member has a hub *D*, which is bored to fit the driving shaft. The driven member has a similar hub *E*, which is also bored to fit the driven shaft. Near the outer edge of the member *A* is an annular groove containing the magnetizing coil *B*. Attached to the hub *E* is a flexible spring steel plate *G*, which carries the armature *C*. Between the two parts of the clutch at the outer edge is a friction facing *H*, which prevents the armature from coming directly against the face of the coil, and also provides high frictional contact for driving. This friction facing is made from woven asbestos and brass wire, similar to the brake lining ordinarily used in automobiles. On the hub *D* are two contact rings *J*, which are insulated from each other, and which are attached to the ends of the magnet winding *B*. The winding is thus supplied with current by contact with a pair of brushes *K* connected with the source of power. Attached to the driven member is a brake drum *L*, around which the brake band *M* fits. This band is of the same material as that used in the friction facing between the clutch members. The ends of the brake band are pivoted at *N* and *O* to a lever *P*, which carries an adjustable weight *Q* at its outer end. Near the center of this lever is pivoted a vertical rod *R*, which extends up into the cylinder *S*. This cylinder encloses a solenoid, by means of which the lever *P* may be raised when the solenoid circuit is closed, thus loosening the brake band around the drum *L*.

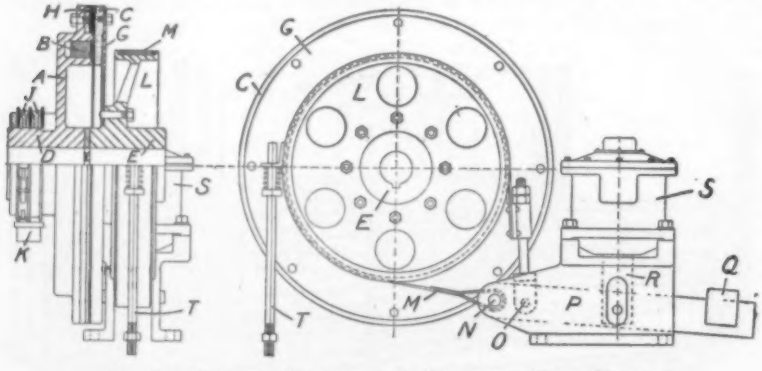


FIG. 1. MAGNETIC CLUTCH WITH AUTOMATIC BAND BRAKE.

The operation of the device is as follows: Assuming that the clutch is mounted on the ends of the driving and driven shafts between the electric motor and the mill, and that the mill is at rest, the current is gradually applied to the magnet coil by means of a rheostat. As the current increases in the coil the flexible steel plate containing the armature is pulled toward the coil. The friction gradually increases between the armature and the friction facing until the current is strong enough to rotate the driven member at the same speed as the driving member. When the current is applied to the magnetic coil, the same source of current is employed to energize the solenoid and to lift the weighted lever *P*, thus loosening the brake band *M*, and allowing the brake drum *L* to run free with the driven shaft. The rod *T* is attached to some permanent support, and only serves to hold one side of the brake band at a point which acts as a pivot when the brake is applied or loose.

In case of accident to the operator or to the machine the switch is thrown by means of a rod or lever conveniently placed, thus breaking the circuit supplying current to the clutch coil. This also interrupts the solenoid circuit, allowing the lever *P* to drop. When this lever drops the weight applies considerable leverage to the brake band, tightening the band around the drum. Thus it will be seen that in addition to shutting off the power, the brake is applied the instant that the two shafts are uncoupled, bringing the mill to a quick stop.

The efficiency of this apparatus was recently demonstrated by a series of tests carried out in the plant of the Racine Rubber Co., of Racine, Wisconsin. There is installed in this plant a 200 horse power, 590 r. p. m. motor geared to a line shaft, from which are operated three rubber mills having 20 and 22-inch rolls, 60 inches long. The clutch is installed between the motor and the mill gears. It is 30 inches in diameter, built in combination with a 33-inch solenoid operated band brake. The herringbone pinion mounted on the shaft to which the motor may be coupled or uncoupled by means of the magnetic clutch, has 21 teeth, 1¾ d. p., and 14-inch face. The gear driven by this pinion has 126 teeth, and weighs approximately 3,500 pounds. From the gear ratios specified it will be seen that the speed of the mill shaft is approximately 100 r. p. m. The three mills driven from this shaft are each operated through machine molded cast gears, the pinion having 16 teeth, and the gear on the drive roll 75 teeth. The speed of the drive roll is, therefore, 21 r. p. m. The gear ratio between the drive roll and front roll is 17 to 27—the friction ratio being, consequently, 1.45 to 1. From the foregoing data

it will be noted that when operating at full speed the peripheral velocity of the drive roll is 22 inches per second.

Fig. 2 shows diagrammatically the installation of the magnetic clutch and brake described above. The shaft of the electric motor *A* carries the driving member *B* of the clutch. This part of the clutch is mounted on the end of the motor shaft. The end of the driven shaft *C* carries the armature *D* of the clutch. Thus it will be seen that when the clutch is disengaged the two shafts are independent of each other. The shaft *C* also carries the automatic brake *E*, which is applied when the clutch circuit is broken. The three mills referred to above, only one of which is shown at *F*, are driven from the common shaft *G* through the pinion *H* and gear *I*. In other respects the drive of the three mills is the same as in any ordinary installation.

There is installed on each mill a safety switch by means of which the operator can, in case of emergency, open the circuit to both clutch winding and brake solenoid, thereby releasing the clutch and applying the brake.

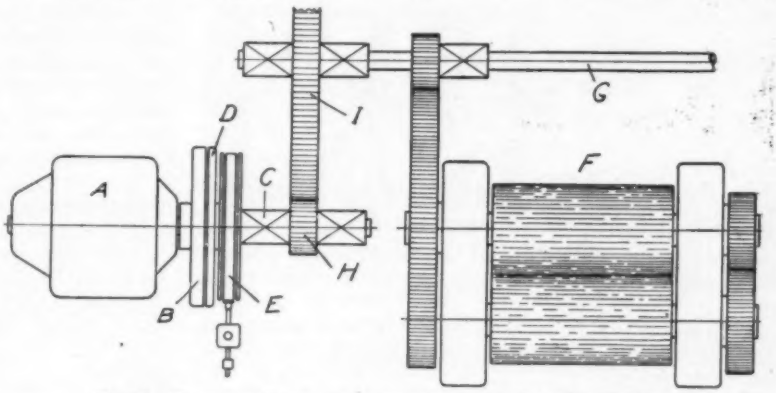


FIG. 2. DIAGRAM SHOWING INSTALLATION OF CLUTCH AND BRAKE.

THE TEST.

For the purpose of measuring the roll travel from the moment of opening the safety switch to the moment of the machinery coming to rest, a tape of drawing paper was glued to the periphery of the 20-inch roll. An electromagnet so designed as to be particularly quick-acting was mounted in a position immediately above the paper tape on the roll, so that a pencil attached to the armature of this electromagnet was held clear of the roll when the magnet was energized; but when the magnet was de-energized the pencil was dropped on the paper, and the distance traveled in stopping accurately measured thereby. It should be particularly noted that this magnet not only indicates the movement of the rolls during the period after the release of the clutch when the brake is bringing the equipment to rest, but it also indicates the time lag between the operation of the safety switch and the releasing of the clutch and application of the stopping brake, because, as already stated, the pencil relay employed was so designed as to be practically instantaneous in operation.

The first test made was to start the equipment, bring it to full speed and shut down by opening the motor line switch at a time when none of the mills was loaded. Under these conditions the drift of the roll in coming to rest measured 276 inches. A second test was made with one mill loaded, under which conditions the distance traveled by the drive roll in stopping was 51.9 inches.

A second series of tests was made to indicate the travel of the rolls before coming to rest by merely opening the circuit to the magnetic clutch without applying the solenoid brake. During these tests the solenoid brake was blocked so as to prevent its application. The first test of this series was made with the rolls operating light, and the distance traveled measured 86 inches. With one mill loaded, the distance traveled by the drive roll before stopping was 18 inches.

The next test was made with the three mills operating light, the clutch and brake circuits being opened simultaneously, and an 18-pound weight being used on the brake lever. Under these conditions the travel of the drive roll was 10.5 inches. During this test it was noted that the brake applied considerably in advance of the releasing of the clutch.

The weight on the brake lever was next changed from 18 to 31 pounds, and two tests were made with this weight on the lever—one with the mills operating light, and the other with one mill loaded. Under the first condition the travel of the front roll before stopping was 6.75 inches, and with one mill loaded the travel was 4.5 inches. On both of these tests it was noted that the brake applied considerably in advance of the release of the magnetic clutch, and in one case the mills were practically at rest before the clutch fully released. It was, therefore, determined to accelerate the releasing of the clutch by arranging to reverse the direction of current flow in its winding, a preventive resistance being included in the circuit, which was of such value as to prevent the re-engagement of the clutch after release. Two tests were made with the reverse switch installed, the first of which was made with 18 pounds on the brake lever and one mill loaded, under which conditions the travel was 4 inches; the second with 31 pounds on the brake lever and one mill loaded, under which conditions the distance traveled after operation of the safety switch was only 2 inches.

As a result of these tests it was determined to install a reverse switch and to leave the equipment with the 18-pound weight on the brake arm. Under these conditions, as already noted, the travel of the roll periphery, after operation of the safety switch, will be 4 inches with one mill loaded, and less than 4 inches in case more than one mill is loaded. It was not deemed advisable to install the 31-pound weight permanently, on account of the severe strains to which the machinery was necessarily subjected to bring the rolls to rest with a movement of but 2 inches.

The following tabulation shows the results obtained in the above tests, in a form which will permit of easier comparison:

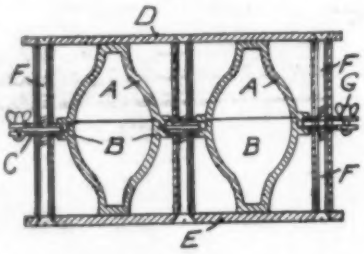
Motor Circuit Opened		Clutch Circuit Opened		Clutch Opened, 18 lb. Brake	Clutch Opened, 31 lb. Brake		Clutch Opened and Rev. 18 lb. Brake Set	Clutch Opened and Rev. 31 lb. Brake Set
Light	1 Mill	Light	1 Mill	Light	Light	1 Mill	1 Mill	1 Mill
276″	51.9″	86″	18″	10.5″	6.75″	4.5″	4″	2″

QUICK CURING MOLDS.

A new system of making soft metal mold castings for the manufacture of all blown rubber work is the subject of a recent patent. Under the present system the walls of molds are of unequal thickness. This causes loss of time in vulcanization and cooling, extra effort in handling and uneven vulcanization.

The soft metal used also costs from 15 to 25 cents per pound, according to quality, and approximately eighty pounds of metal is contained in a two-cavity mold formed for the purpose of manufacturing the ordinary auto horn bulb. Manufacturers frequently use more than 500 molds of this sort weighing approximately 40,000 pounds. Under the new process molds are made with the walls of a uniform thickness of about one-eighth of an inch. This is done by means of pressure, by the use of a die and a polished steel plunger. The metal is thus solid and homogeneous, and the interior finished with a glassy, smooth surface, which prevents scaling and warping. A light iron frame outside of the soft metal protects it from injury.

Referring to the drawing, which shows a section of a mold for making soft rubber bulbs such as are used on atomizers, the mold shells *A* are formed with flanges *B*, which inter-engage, and also fit into recesses in plates *C*. These plates are connected with the upper and lower frame plates *D* and *E* by screw bolts *F*, and the mold sections are clamped together by thumb screws *G*. The mold shells *A* are cast from soft metal such as tin, type-metal, aluminum or alloy, and are finished smooth by swaging. A mold of this sort may be made of ten cent metal, and weighs ten pounds. Thus 500 two-cavity auto horn bulb molds would weigh only 10,000 pounds as against 40,000 pounds weight for the same number of molds as made today.

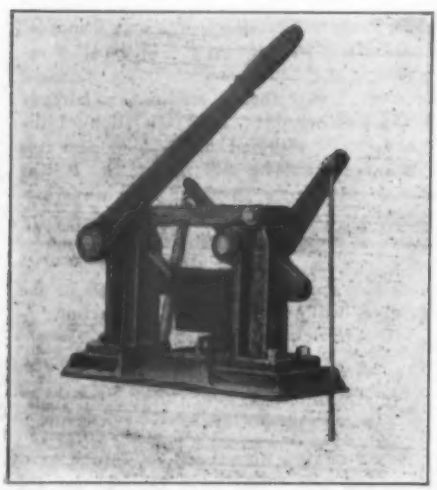


Quick curing and cooling, lengthened life, more frequent use, economy in metal, and greater care in handling are some of the results obtained.

The inventor is William Eggers, of Brooklyn, New York, a practical mold maker known to the whole trade.

RUBBER STOCK CUTTING SHEAR.

A convenient form of shearing machine for cutting rubber stock which is to be placed in molds to be cured—such as horseshoe pads, rubber heels, and other small rubber articles—has been introduced by a manufacturer of rubber machinery. This machine is built to be operated either by hand or foot pressure, the shearing action of the knife on the stock being such as to produce a clean, smooth cut. The knife is of fine tool steel and will hold its cutting edge without frequent sharpening. Where the knife comes in contact with the frame there is placed a hardwood strip in a groove of the frame to protect the cutting edge. The frame is of cast iron and is machined at the joints. Altho the machine shown is of small size, shears of larger construction for special purposes may be built to order. [Birmingham Iron Foundry, Akron Branch, Akron, Ohio.]



SHEARING MACHINE FOR CUTTING RUBBER STOCK.

VULCANIZERS FOR EVERY PURPOSE.

The Biggs Boiler Works Co., of Akron, Ohio, has just issued catalog No. 16 covering tire repair equipment. The catalog contains 40 pages showing different styles of both vertical and horizontal tire and tube vulcanizers, as well as small apparatus for the repair shop and garage. Several pages are devoted to directions for installing and operating repair equipment heated by coil steam generators. The gravity-return and non-return systems for operating steam vulcanizers are illustrated and described.

THE WERNER & PFLEIDERER CO. OPENS A WAREHOUSE.

In connection with its New York office, 1031 Tribune Building, the Werner & Pfleiderer Co. has opened a warehouse in that neighborhood where prospective customers can see all the various machines made by the company—washing, masticating, compounding machines, as well as rubber solution and cement making machines—thoroughly demonstrated, so that they can judge their value for themselves. Customers from out of town will find it to their advantage to make an appointment in advance, and if they wish, they can bring their own materials to be used in these demonstrations.

AKRON-WILLIAMS TIRE REPAIR OUTFITS FOR FORD SERVICE STATIONS.

The Ford Motor Co. recently ordered Akron-Williams localized heat tire repair outfits for each of its fourteen service stations. As this was done after very thorough testing of the quality and efficiency of various repair outfits, it may be considered a great compliment to the Williams Foundry & Machine Co., of Akron, which manufactures these outfits. The "A-W" tire repair vulcanizers have the exclusive feature—which is patented—of localized steam chambers. Each section is heated by three separate steam chambers, which makes it possible to apply the heat exactly where the repair is to be made and to prevent over-curing or burning.

ANOTHER TIRE TREAD.

Miller's Non-Skid "Cog" Tread is noted for its triple traction surface and surplus rubber to resist rut-wear and which suffices, when ground-tread is worn smooth, to provide a two-thirds traction surface, obviating the necessity of chains on slippery drives. The corrugated or "Cog" tread surface is said to promote a highly satisfactory action and to be wear resisting. (Chas. E. Miller, Anderson, Indiana.)

RUBBER GARTERS WITH POCKETS.

It is currently reported—whether the report is true or not it is impossible at this time to verify, there being no statistics in this office bearing on the subject—that some women at some times deposit their valuables in their hosiery. In order to accommodate ladies with such tendencies, and to make it easier for them to deposit their valuables where they can be obtained with a fair degree of readiness, a woman residing in one of the smaller towns of New York State has devised an elastic garter—made presumably of rubber threads—which is in reality a double garter with a number of pockets sewed in between the two, the pockets of course opening at the top. The theory is that diamond rings and other small but valuable objects can be deposited in these bags, the garter put in its place and the desired security obtained. It is hardly necessary to add that to make this movable deposit entirely secure the garter should be a good fit and the rubber of such a quality that it will not give way while the wearer is about her daily walks.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the month of February, 1914, and for the first seven months of five fiscal years, beginning July.

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
February, 1914	$140,015	$77,504	$451,992	$669,511
July-January, 1914	1,429,857	755,067	4,305,884	6,490,808
Total, 1913-14.....	$1,569,872	$832,571	$4,757,876	$7,160,319
Total, 1912-13.....	1,766,066	1,077,329	5,339,773	8,183,168
Total, 1911-12.....	1,491,121	1,139,181	4,640,177	7,270,479
Total, 1910-11.....	1,354,060	1,699,371	3,899,406	6,952,837
Total, 1909-10.....	1,233,910	1,437,252	3,053,753	5,724,915

The above heading, "All Other Rubber," for the month of February, 1914, and for the seven months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other	TOTAL.
February, 1914	$169,174	$38,848	$208,022
July-January, 1914	1,882,681	339,390	2,222,071
Total, 1913-14.....	$2,051,855	$378,238	$2,430,093
Total, 1912-13.....	2,327,096	410,891	2,737,987
Total, 1911-12.....	1,641,373	349,372	1,990,745

RUBBER CLUB NEWS.

The Rubber Club of America is a member of the Chamber of Commerce of the United States of America, of Washington, D. C., and was recently asked to vote on certain recommendations which the latter body contemplates submitting to Congress. The first recommendation called for the creation by Congress of an Interstate Trade Commission, but the Rubber Club, after a thorough canvass of its firm members, has decided to oppose this recommendation and has registered a negative vote with the Chamber of Commerce.

At the meeting of the Executive Committee held May 19, 1914, Francis H. Appleton, Jr., was appointed chairman of the Sports Committee in place of W. L. Pitcher. Mr. Pitcher declined to serve, on the ground that the chairman should be someone located in Boston.

Capt. Francis H. Appleton was appointed chairman of the Committee on Resolutions in place of E. E. Wadbrook who declined to serve.

Henry Spadone, of the Gutta Percha & Rubber Manufacturing Co., was added to the Nominating Committee in place of E. E. Wadbrook who declined to serve.

A special committee to decide the date and place of the outing of the club the coming summer was appointed as follows: Frederick H. Jones, of the Tyer Rubber Co., Andover, Massachusetts; Robert L. Rice, Hood Rubber Co., Watertown, Massachusetts, and Harold P. Fuller, of the E. H. Clapp Rubber Co., Boston.

George B. Hodgman and Harry S. Vorhis were appointed as delegates of the Rubber Club of America to the Chamber of Commerce of the United States of America. George B. Hodgman was appointed a member of the National Council of this Chamber.

F. H. Sanford, formerly manager of the firm of Adelbert H. Alden, Limited, of Manáos, Brazil, is now living in the south of France, having retired from the rubber business with a competence.

THE EDITOR'S BOOK TABLE.

SOLVENTS, OILS, GUMS, WAXES AND ALLIED SUBSTANCES. By Frederic S. Hyde, Ph.B., New York, 1913. D. Van Nostrand Co. [Cloth, 8vo, 176 pages. Price, $2.00.]

IN this condensation of the main facts relating to the commercial organic products associated with industrial chemistry, Mr. Hyde has placed a valuable book of reference at the disposal of factory chemists and others interested in technical investigations.

Besides the subjects referred to in the title, there are various others dealt with, bringing the number of chapters to fifteen. Under the head of "Various Solvents and Fluids" prominence is given to aldehydes, alcohols, ethers and benzol derivatives, attention being drawn to the distinction between the last-named substance (or b-e-n-z-e-n-e) and petrolic benzine, or refined naphtha. The following chapter is devoted to terpene bodies, camphors, essential oils, fragrant substances and balsams.

In the third chapter the differences are pointed out between true gums and gum resins, which do not come under the former category. At this point the rubber chemist will find interest in the chemical description of rubber, recalling certain known facts such as the specific gravity of pure rubber being less than that of water. The commercial product in balls or cakes, it is added, is generally gray or brown from oxidation and impurities, being more or less elastic and liable to have a sour, unpleasant odor. It is insoluble in alcohol, and unaffected by dilute acids or alkalies.

Manufactured rubber may, however, be rendered soluble by treatment with: (1) Acetone, to remove resins, oils, etc.; (2) alcoholic potash, to remove oxidized fatty "substitutes"; (3) cold nitro-benzol, to remove asphalt or pitch; (4) boiling nitro-benzol for solution, leaving a residue of mineral matter. Anilin at from 140 degs. to 180 degs. C. has also been proposed as a solvent, the rubber being separated as a tough mass. In the author's opinion hot or boiling nitro-benzol is one of the best rubber solvents, altho the material in solution may thereby become partially blackened or carbonized. Pure rubber freshly cut loses its elasticity on heating, and becomes brittle on chilling. Vulcanizing increases elasticity and insolubility, but lessens durability and adhesiveness. Hard rubber contains an excess of sulphur and "filler," baked at 150 degs. C.

Gutta percha is closely related to caoutchouc, but is from the latex of a different tree, being less elastic and harder than rubber. Rubber substitutes are made from corn oil, linseed oil and similar vegetable oils by the action of sulphur or sulphur chloride, the latter producing a light, spongy mass somewhat elastic, but friable and lacking in resiliency. Another group considered is that of bitumens.

Carbohydrates, albumenoids and proteids are next taken up, followed by a discussion of the commercial tests on oils and fats. The final chapters deal with waxes and miscellaneous organic substances. A full index facilitates reference, and enhances the value of this useful work.

VANDEGRIFT'S DIGEST OF UNITED STATES TARIFF ACT, 1913. F. B. Vandegrift & Co., 15-25 Whitehall street, New York. [Paper, 182 pages. Price, 50 cents.]

TO those seeking for light on points connected with the tariff of 1913, this handy little work affords a quantity of needed information. In the first place the act itself, with its fourteen schedules and the free list, occupies some 60 pages, forming the first section. Section II, covering 21 pages, contains the provisions of the income tax legislation, while in Sections III and IV various administrative features are treated. The text concludes with an extract of the sections of the act of 1909 not repealed by that of 1913. An alphabetical schedule of the duties, with references to the respective paragraphs, completes the work, which will be appreciated by all interested in the import trade.

NEW TRADE PUBLICATIONS.

THE B. F. Goodrich Co. has recently added to its already extensive series of aids to Goodrich tire dealers a set of four unusually attractive window cards or wall hangers. One of these cards—which are 11 x 14½ inches in size, on a white ground with narrow inside gray border—shows a picture of a "Native Gathering Sap." This young African girl's raiment is truly barbaric in splendor and wealth of coloring and she is pictured in the act of making incisions in the bark of a rubber tree with a tapping knife. This picture is intended to convey an idea of the purity of the rubber used in Goodrich tires, coming direct from the rubber groves and being nature's contribution to their production. Another card, in equally effective colorings, shows water being poured from one glass to another, and suggests that as waters from the Atlantic and the Pacific poured into the same glass become one and inseparable, so largely become the fabric and rubber in Goodrich tires. A third card, perhaps more striking and attractive than either of the other two, shows an automobile containing a young woman and a little girl, the former driving the car. This suggests the advisability of using the Goodrich tire "with the tread that makes the brake effective and makes motoring safe for her and the kiddies." The fourth card has a picture entitled "Eating up the Road," a feat claimed to be possible of accomplishment with Goodrich tires as against the usual result of the road eating up the tires.

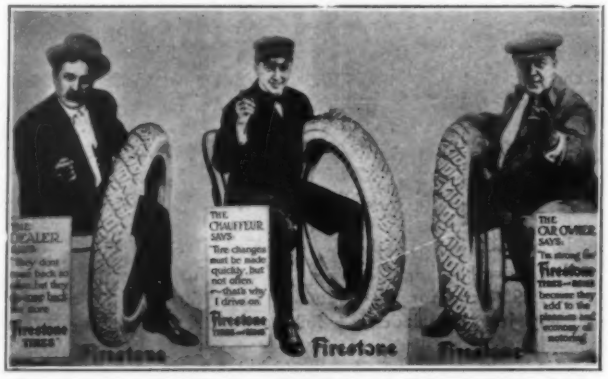
The Encyclopedia of Selling Helps, issued by the Dealers' Help Department of the Goodyear Tire & Rubber Co., for the exclusive use of Goodyear dealers, is a notable addition to rubber trade literature. It contains suggestions for 100 ways of pushing business, these suggestions being contributed by 20 expert workers, as the result of extensive investigations carried on among retail dealers all over the country. Commencing with attractive transparencies, window cards and outside and inside hangers, and continuing with handbills, calendars, stickers, blotters and all the more familiar forms of general advertising, there follow pages devoted to moving picture slides, furnished free and charges prepaid; road signs, at prices amounting to only about one-sixth the usual charge; ready made ads., tire racks and display stands; a plan for mail order correspondence, including stationery, folders, form letters, etc., etc. This book of selling helps covers 32 pages and is attractively illustrated throughout in colors. Each copy sent out is accompanied by an order slip containing a list of these various helps, which the dealer may use in sending in his requisition. This encyclopedia should be extremely valuable to the tire dealer, giving him a better idea of the merchandise he offers for sale and suggesting means by which he may secure at trifling cost —and in some cases without any expense whatever—well prepared and carefully thought out advertising matter which is bound to attract the consumer's attention.

"General Information Regarding Fire Insurance Requirements" is the title of a little pamphlet published jointly by the New York Chapter of the American Institute of Architects and the New York Board of Fire Underwriters, and issued under the auspices of the National Fire Protection Association, with the object of promoting the science and improving the methods of fire protection and prevention, as well as of diminishing the enormous national fire waste of more than $200,000,000 annually. Attention is called to the six important conditions to be taken into account: 1, Exposure to fire from without; 2, Construction of the building; 3, Plan of the building; 4, Fire extinguishing equipment; 5, Nature of the occupancy; 6, Public fire protection. In conclusion this little guide presents a list of some thirty pamphlets giving information on the important subjects which are available for distribution.

Send for index to "Crude Rubber and Compounding Ingredients."

FIRESTONE CUTOUTS.

Before the close of the present motoring season the three figures shown in the accompanying cut will probably have become familiar to every automobilist in the country as well as to those who hope some day to be automobilists. These figures represent three types of men, all of one mind, however, regarding the type of tire they consider most desirable, and each willing to give the reason for his preference. With


THE DEALER SAYS
"They don't come back as often but they stay back for more"
Firestone TIRES
THE CHAUFFEUR SAYS
"Tire changes must be made quickly, but not often. That's why I drive on"
Firestone TIRES and RIMS
Firestone
THE CAR OWNER SAYS:
"I'm strong for Firestone TIRES and RIMS because they add to the pleasure and economy of motoring"

THE THREE "TIRE-WISE" MEN.

the car owner "strong for Firestone tires and rims" both for reasons of comfort and economy, and the driver because of infrequent tire changes and the quickness with which these are accomplished, it is quite natural for the dealer to be pleased with the product that gives such satisfaction to the buyer and user and makes him come back for more. These three figures are supplied in cutout form by the Firestone Tire & Rubber Co. to Firestone tire dealers everywhere, both in large size for window display and in miniature for insertion in mail and packages. Special stationery bearing imprints of the cutouts are also provided, with miniatures of the three contented "tire-wise men" for distribution to the motorists of the future—the children.

CEYLON AT NEW YORK 1912 RUBBER EXPOSITION.

By order of the Ceylon government, the report of Mr. F. Crosbie-Roles, commissioner from the island to the New York Rubber Exposition of 1912, has been printed. Under the various heads of "The Ceylon Stand," "The Exhibits," "Trade Development," "Consular Service and Colonial Trade," "Wild Rubber" and others, the principal features of the exposition are recorded in detail. There were 96 cases of exhibits, in addition to 24 cases containing rubber for competition. In conclusion Mr. Roles acknowledges the courtesy and hospitality extended to him during his stay in America.

CHATTANOOGA WANTS A RUBBER INDUSTRY.

An effort is being made by the Chattanooga Industrial Board—composed of members of the local Retail Merchants' Association, Manufacturers' Association, Chamber of Commerce, Real Estate Exchange, Jobbers' Association and Clearing House—to interest some responsible manufacturing concern in locating a rubber industry in Chattanooga, Tennessee. This city has nine lines of railroad and a navigable river, is within 450 miles of four different ports and within 75 miles of a half dozen different textile mills. It is claimed to have hydro-electric power to a greater extent than any other city in the country, with but one exception, and obtainable at a lower price than in that excepted city, also to have steam coal at $1.55 per ton, f. o. b. plant, and cheap and dependable labor—all of which would seem to make it a desirable manufacturing centre.

Interesting Letters From Our Readers.

AMERICAN IDEAS ON STANDARDIZING PLANTATION RUBBER.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR: Is it not time for a "Plantation Rubber Consumers' Association" to be organized in the United States to vigorously impress upon our British and Dutch planting friends the need of reforms in the East such as American manufacturers want (not as the planters think)?

Thus far the Rubber Growers' Association of London has been doing all the talking and acting, but this progressive organization makes no distinction between cultivated *Hevea* rubber from a five-year-old tree and that from a twenty-five-year-old tree. However, as the rate of growth in the East is very rapid in the sun, it is safe to assume that a ten-year-old tree having plenty of room is as large as a twenty-year-old tree in the dark forest of the Amazon Valley; hence the ten-year cultivated tree is mature, or reasonably so.

Various managers, superintendents and chemists are already lined up with my views, namely: separating the latex into three grades of maturity in the East, and smoke-curing, omitting the preliminary acetic acid coagulation. These same practical rubber men also express grave doubts as to the possibility of the proposed London Testing Station giving accurate tests, on account of the huge tonnage and also because each half ton would not be sufficient. It might be wiser to test a limited amount from every case for specification purposes when competing with Upriver fine Pará, but to attempt to properly test thirty thousand tons per annum would be very difficult indeed.

The wise rubber man is always ready to learn. In fact, one can never get through learning about rubber generally. Consequently a "Plantation Rubber Consumers' Association" would appeal to the wide-awake manufacturers who wish to take active steps to prevent tampering with cultivated rubber, excessive handling (every time the case is opened it means another shower of splinters), and to open negotiations with equally progressive plantation companies which are willing and anxious to please the manufacturers by following out their ideas in an honest manner. The manufacturers who desire relief should be adequately represented at the forthcoming London Exhibition in June.

I have been studying the preparation and production of wild and cultivated *Hevea* for the last 10 years in various producing countries, also in London, especially for manufacturers. Mr. H. C. Pearson during his trip to Malaya in 1904 found that the *Heveas* were then not tapped until they had a girth of 30 inches (3 feet from the ground).

The first lots of plantation rubber were good, but the comparative high prices in 1905-6-7 tempted the planters to try tapping trees only 18 inches in circumference. In 1907 a complaint appeared in THE INDIA RUBBER WORLD from a Canadian factory concerning the unreliable character of "Ceylon" rubber. There is no question that young or immature plantation rubber has wide variations.

As to minor variations, due to differences in soil and rainfall, also overtapping, compulsory branding on smoked sheets (without acid) would in time educate the manufacturers as to the behavior of definite lots in their works. Moisture is not necessary in plantation rubber. My opinion is that in the Amazon country smoked sheet as cured or coagulated on a revolving drum will not equal in quality the *pelles*, as the natives carelessly leave the rubber exposed to the sun for weeks, causing the oxidizing of the outer layers of the balls or hams, and greatly weakening the new style sheets—which I have already seen. By the way, smoked sheet without acid when dry is practically black, but when rolled into a ball, even with a small amount of moisture, is brown or similar to Upriver fine Pará when cut open.

The smoked sheet of to-day, of a dark amber color, which is first coagulated with acetic acid, has given quite good results as prepared by some of the older estates. This is another argument for smoked sheet free from acid and guaranteed from reasonably mature trees, say 10 years old. As half the area of cultivated *Hevea* in the East is still less than 5 years old, it is quite evident the Rubber Growers' Association does not want immature rubber to be classed as inferior to mature. The only way out is for the consumers to bring pressure on the Colonial Governments for legislation making branding compulsory, and keeping separate on the estates immature latex, and not mixing same in with the milk from older trees. Limiting the huge number of styles of plantation rubber would be another blessing to the manufacturer.

Yours truly,

QUINCY TUCKER.

43 Tremont street, Boston.

WATERING OF GOLD COAST LUMPS.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR: The allegations made on the above subject in your anonymous correspondent's letter in the current issue of your valuable paper, must be viewed with the greatest concern. It is sincerely to be hoped that those implicated will take the opportunity of replying to the accusations.

At this moment it would probably be of great interest to a number of American manufacturers who use this grade of rubber to know the terms on which it is dealt in on the Liverpool Market, and the methods adopted when receiving the particular grade in question.

"Prime Selected Quality Contracts" between importers and dealers are made with the proviso of "Soft, soft-spongy, dead and loaded pieces to be rejected, *but only doubtful pieces to be cut,*" and "Rejection Contracts" with the clause "excluding pasty or chalky pieces."

Now Gold Coast Lump always arrives in Liverpool in an unselected condition, the selection for the various qualities being made by the dealers themselves in the presence of a representative of the importers. If the goods are properly received, the following procedure should be observed. In order to obtain a parcel of Selected quality, it is obviously necessary for every piece to be handled and tested. There should be at least two representatives of the purchasing dealer present at the selection, men of many years' experience and unquestioned ability.

In the first place let it at once be said that the whole contents of each cask should be, according to Liverpool Rules, turned out upon the floor; any loose moisture which has sweated out of the rubber, or has been in the cask, consequently running away.

The lumps are then selected for First Quality, and doubtful pieces cut. Should any of these cut pieces turn out up to First Standard they must of course be accepted; and as Gold Coast Lump is naturally a wet and spongy rubber, it is only likely that a certain amount of water will ooze out of these cut pieces, when the cask becomes full, and pressure is exerted in order to replace the head. But this is not any loss to a manufacturer, since as no

water has been added artificially, the ultimate loss in washing will only be the same.

The figure of 60 per cent. loss which is stated by your correspondent is certainly a little more than the average, but it will probably interest him to know that, on this side, the figure generally expected by manufacturers is a loss ranging between 50 and 60 per cent., say 55 per cent. average. The fine hard "silky" lumps imported 10 to 15 years ago, which then only lost 35 to 40 per cent. are no longer available, but the comparative result to a manufacturer is the same now as then, since the extra loss is accounted for in the price. The latex still remains the same, being of exceedingly fine quality, only that the method of preparation is possibly not so good as formerly.

The suggestion made in your correspondent's letter that every warehouse he entered had a hose and faucet, has no bearing at all on the subject, as there are very few warehouses for storing any other produce in Liverpool without such conveniences. We are glad to be able to say that in most cases they remain conveniences, and are not used for purposes such as that suggested. "Because a man has a box of matches in his pocket, we cannot denounce him as an inveterate smoker."

There should be no reason why your manufacturers should not be able to rely upon the quality or condition of this grade, and it would be a great pity if, on account of one or two unfortunate experiences, their attention were wholly diverted to other grades.

Having shipped large quantities of Gold Coast Lumps to your side without the slightest complaint, we feel it our duty to assure your friends that there are still many firms dealing in this grade (amongst whom we have the honor to sign ourselves) who watch the trade's interest in the manner stated above.

In conclusion, we should just like to say that it is a great hardship if American manufacturers require the rubber re-taring on the other side. If this is done, then the dealer becomes responsible for a loss over which he has no control. If any of the loose water is allowed to run off in New York—which water is bound to collect in consequence of the cutting in Liverpool—then the consumer is obtaining the benefit as he will have correspondingly less loss in washing, as the rubber will be in drier condition than when shipped from Liverpool.

An officially certified weight-note (gross and tare) immediately before shipping should be all that is required by your friends.

Very truly yours,

27 Mincing Lane, London, E. C. RITTER & HANKIN.

April 20, 1914.

SPLINTERS OF WOOD IN PLANTATION RUBBER.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR: Perhaps this would be a good time to bring up the complaints received from manufacturers because of small splinters of wood found in even the best plantation crêpes.

That some of these splinters are due to the method of opening the boxes at the factories is certain. An axe is generally used, to save time and labor. On the other hand, the splinters are found even in the middle of the packages, and could only have crept in during transportation or re-packing in London.

It would seem that some sort of an inner covering put around the rubber when it is placed in the boxes would not only prevent these splinters from working into the parcel during transportation, but would also keep them out when the rubber is opened at the factories.

Just what covering to use seems to be the serious problem. Possibly some sort of duck or muslin wrapper could be used. I fear that ordinary paper would tear, or if by any chance it should become wet would work into the rubber and be almost as hard to get out as splinters.

If the planters could see the condition of the rubber on arrival they would—if they do not already—appreciate the necessity for some measures being taken. Needless to say, when the rubber leaves the plantations it is clean and packed in boxes which are most carefully made and smooth on the interior.

It seems a shame that one of the great advantages of plantation rubber—that it can be put into the compound without being washed and dried—should be many times defeated by these little splinters of wood.

Yours truly,

HAROLD W. FRENCH.

Akron, Ohio.

THE ETYMOLOGY OF THE VERB "TO RUBBER."

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR: "Rubber," the verb, intransitive and also inelegant, meaning to stare with eager and impertinent or naive curiosity, is not one of those gems of our adaptive language which come into being of their own accord. It had a definite origin for which one man is responsible. Thirty years ago New York and other cities were infested with dime museums in which the chief attractions offered to an admiring and discriminating public were various deformed and abnormal human beings—ladies whose avoirdupois was reckoned by the ton, living skeletons whose salary was adequate to their condition, strong men who lifted gigantic hollow dumb-bells, and bearded ladies who wore diamond earrings and were fathers of large families. In their desperate search for new living curiosities they pounced upon some unhappy fat man who had grown thin and whose dermal covering was more than ample for present necessities. He was the "man with a rubber skin" and took his place at once as a star of equal magnitude with others of his particular galaxy.

But dime museum men are not the only ones who have a hard hunt for material. Writers and artists also are sometimes put to it in their effort to meet the public taste for something new. So, about 1887, an artist on "Puck," taking the cue from the dime museum, produced a series of pictures of the man with a rubber neck, whose adaptable cervical anatomy proved useful to its owner in various and sundry ways. It caught the public fancy, and when in crowds people were tiptoeing and using their efforts to peer above the heads of the front row contingent they were good-humoredly asked if they did not "wish they had a rubber neck like that fellow in 'Puck.'" Soon the origin was lost and "rubber-necking" took the place of "craning," a perfectly respectable word which was once a humorous reference to the bird whose neck is its chief stock in trade. Americans have to save time, so the extra syllable was soon dropped from the verb, being retained in the substantive which now finds its chief use as an adjective compound when attached to the wagon which gets back to the beginning and rolls on rubber wheels undreamed of at the time the melancholy artist produced his first picture of the man with a rubber neck.

New York, May 20, 1914. T. M. U.

RUBBER MATS FOR THE SAFETY OF WORKMEN.

Operatives employed in woodworking operations often have to contend with a very slippery condition of the floor—because of sawdust and fine shavings—around saws, shapers, jointers and other similar machines. It is obvious that such a condition is a very dangerous one, as a slip or fall on the part of a workman is likely to end in disaster. To obviate this danger those who are interested in the safety of workmen recommend the use of rubber mats to cover the slippery spot where the workman has to stand, and this simple but most salutary device is being introduced into many plants.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will receive bids until June 16 for furnishing gum and rubber gasket; schedule 6,785. Report No. 1,787.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

ASBESTOS AND RUBBER.

IT has been suggested that I should say something about the association of asbestos and rubber in British factories concerned with the production of goods composed of the two materials. This is a case where detailed treatment would involve giving more minutiae as regards the individual firms concerned than I feel at liberty to give. One may, however, be permitted to give briefly the salient features concerning the information asked for. It is probably correct to say that all our asbestos works do a certain amount of rubber manufacturing and that practically all our rubber works which make mechanical goods use more or less asbestos. In the first case the rubber is a minor department of the business, and in the second case the asbestos is a side line, so to speak. The goods manufactured in both cases belong generally speaking to one class which may be roughly designated as steam and engine packings.

In some cases the rubber works after proofing the asbestos sheeting with a dough of a cheap quality make up the sheet into the finished packing in the desired form, and in other cases the proofed asbestos is sold to other firms which make up the packings and put them on a highly competitive market under their own or some trade name. Since the amalgamation of the United Asbestos Co. and Balli Asbestos Co. into Balli United Asbestos Co., the rubber side of the business has all been carried on at the Harefield Works, Middlesex. Messrs. Turner Brothers, Limited, of Rochdale and Manchester, are the principal competitors of the above concern. In addition to the ordinary asbestos-rubber packings Messrs. Turner have in recent years done a large business in Permanite, a high pressure jointing material.

THE DOUGHTY PATENT VULCANIZER.

Altho the patent for this machine expired three years ago, and its use is therefore open to any tire manufacturing firm, it is a fact that it is still practically a monopoly of the Dunlop Rubber Co., its original owners in this country. When Mr. Doughty, an American, offered his patent for sale in England his price was £100,000, at which figure there were no buyers. Eventually, however, a Birmingham gentleman obtained it at a figure which left a handsome profit in resale to the Dunlop Co., for, I understand, £80,000. The machines have not been imported from America, but have been made in Birmingham and Manchester. For those not acquainted with the topic I may say that the object of the machine is the rapid cure of tire covers and inner tubes at a high temperature, the usual figures for tire covers being 3½ minutes at 160 pounds steam pressure. The machines are tested by steam, 350 pounds pressure, and hydra tested to 1,200 pounds per square inch. It is understood that there are 350 of these machines in the Dunlop works at Birmingham. I may say that the machine for vulcanizing inner tubes is of quite a different type from the machine for covers. An important point with regard to the successful use of the machine is the composition of the rubber, and this is the particular rock on which other firms which installed it when the patent ran out have struck. For satisfactory results it is necessary that the rubber be of a certain standard, from which any deviation will give rise to trouble and loss.

GORTON RUBBER CO.

The negotiations for the private sale of the Droylsden works of this company, now in liquidation, having proved unsuccessful, a piecemeal sale by auction took place on the premises on April 30. A satisfactory number of buyers assembled, tho the proceedings lacked the animation which characterized the sale at the Gorton works of the company a month earlier, when, to use the expression of a machinery manufacturer, "buyers went mad." This difference may be accounted for by the fact that whereas at Gorton there was a large amount of quite new and up-to-date machinery, at Droylsden practically all the plant was old. The stock of raw rubber on hand fetched very good prices, a lot of *Hevea* crêpe (no further particularization) being knocked down for 2s. 6d. per pound, which called forth the *sotto voce* remark from a man present that he could buy the same stuff in the market at 2s. 4d. per pound.

THE FORD MOTOR CAR CO.

This concern, which is located in Trafford Park, Manchester, after having announced that its profit-sharing scheme would not be extended to the Manchester works, has now reversed its decision. The payment of a minimum wage of £3 per week is very shortly to take effect, and it is not surprising therefore that the works have been besieged by would-be employes, many of whom possess no qualifications for the work they are anxious to undertake. The new move has naturally excited a good deal of comment among other employers of labor who are not making the large profits of the Ford company and who cannot afford to emulate their example, whatever their philanthropic ideas may be. In conversation with other manufacturers I find that the opinion exists that difficulties will arise with the highly paid men on the score of the supervision—"grandmotherly" they term it—to which they must conform in their method and standard of living. The rules and regulations associated with the receipt of the high wage, tho on their face of an entirely salutary nature, will be found irksome by the free-born Briton, it is said, and it is surmised that many will prefer to do without the bonus in order to retain their freedom of action as to their method of living. The situation is an interesting one and I shall watch developments with a view of reverting to the topic on a future occasion.

SOLID TIRE MANUFACTURING.

This is a branch of the rubber business which is displaying great activity at the present time, more especially in the number of firms which have recently taken it up and among which may be mentioned Henley's Telegraph Co., the Harboro Rubber Co., the Perivale Rubber Works and Redfern's Rubber Works. Of course I am not mentioning firms which have already made their names well known in the solid motor tire world. The advent of some of the smaller firms into the business may have had some effect upon prices, but it may be taken that the 50 per cent. reduction in prices in the last year or so has been mainly due to the combined causes of cheap rubber and close competition among the old-established concerns.

THE LATE MR. R. K. GRAY.

Many expressions of deep regret have been evoked by the death of Robert Kaye Gray, who for a period of 44 years was prominently connected with the India Rubber, Guttapercha and Telegraph Works, Limited, of Silvertown, London. Mr. Gray was prominent as an electrician, having been president of the Institution of Electrical Engineers; and in private life he was well known in connection with various scientific and educational institutions. He was altogether a man of note apart from his purely business attainments, which, it is recognized by his late colleagues, bore so important a part in the development of the large Silvertown concern.

THE COAGULATION OF HEVEA LATEX.

A paper, the full title of which was "On the Coagulation of the Latex of *Hevea Brasiliensis* and Its Bearing on the Strength of Rubber," by Newton W. Barritt, B. A., of the International Institute of Agriculture, Rome, formerly Economic Botanist, Fed-

erated Malay States, was recently read, or rather submitted—the author not being present—before the Manchester section of the Society of Chemical Industry, and is to be found in full in the society's journal for March 31. It was announced by the chairman that those rubber experts who had assembled would have the advantage of reading the paper in the journal before the discussion, which would take place at a future meeting which was to take the form of a rubber evening. So far, I may say, no notice has been given of this rubber evening.

With regard to the paper perhaps a few words by way of a summary of its contents will prove acceptable to those who have not much time to study contemporary literature. The author's object is to find out the causes for the difference in strength between Brazilian and plantation rubber, it being clear from his general remarks that he accepts the manufacturers' statement as to the superiority of the wild product, while he discounts the experimental work of those who aver that the difference exists in imagination only. With respect to the Brazilian curing process he attaches considerable importance to the evaporation of water and the consequent increase in concentration of the serum as a factor influencing coagulation. The part played by the protein was undoubtedly of importance. The idea that cleanliness of the rubber had much to do with quality was a mistake common with planters.

The experimental work carried out by the author consisted in treating a large number of samples of latex in test tubes with varying proportions of standard solutions of acid and salt of various kinds. The water-absorbing capacity of the protein was also determined. The results obtained support the results published by others that the protein constituents play an important part in coagulation and determine to a considerable degree the physical properties of the rubber. He thought that the high concentration of salt and protein in the Brazilian process determined the superior qualities of the rubber and that the dilution of latex by water and acid solution was largely responsible for the inferiority of plantation rubber. This artificial dilution of the latex would result in considerable variation in the rubber produced from day to day. He argued that if dilution of the latex lowers the quality of the rubber, increasing the concentration of salts or protein in the latex should improve the rubber. Samples of rubber coagulated in the presence of varying concentration of salts have been prepared and manufacturers' tests of these samples are now in progress and will be published as soon as available. The author is sufficiently modest to defer expressing any opinion as to the value of his method until the practical tests are concluded, and it may be assumed that he himself is certainly not the only one who will await the result with interest.

RUBBER OVER-PRODUCTION FROM AN ENGLISH STANDPOINT.

A German estimate lately placed this year's production of plantation rubber at 84,000 tons, and the world's aggregate for 1914 at 145,000 tons, with an anticipated consumption of 115,000 tons. Commenting on these estimates, the "Financial Times" of London remarks: "If this assumption should prove to be correct, an over-production of 30,000 tons would have to be reckoned with, so that the maintenance of the present level of prices would hardly be expected."

THE ENGLISH SCRAP RUBBER MARKET.

During April the opinion prevailed in the London market that lower prices for scrap rubber would be needed for inducing transactions of importance. It would seem that the spring collections have been on a larger scale than last year. Garages, which in April, 1913, had 3 to 4 tons to sell, find this year they have twice that quantity, and are much surprised at being able to get only about half of last year's prices. Large parcels of anti-skid covers have been offered from Germany at low rates.

Bicycle tires have maintained their prices, probably because collections have not been large owing to the low quotations.

THE LONDON RUBBER EXHIBITION.

THE Fourth International Rubber and Allied Industries Exhibition will be formally opened at the Royal Agricultural Hall, London, at 3 p. m., June 24, by His Royal Highness Prince Arthur of Connaught. To be sure there will be a press function on the preceding day, but the formal opening of the big show will be as above described. Mr. Manders, the organizing manager of this undertaking, as he has been organizing manager of its three successful predecessors, wrote some time ago to the various associations and institutions connected with the rubber industry in all parts of the world stating at what hour the opening ceremony of the exhibition would begin and asking them if at that particular hour, whatever time of day it might be in their part of the world, they would not get their various members together and wish success to the rubber industry throughout the world.

Mr. Manders, who speaks from the fullness of experience, promises to visitors and exhibitors the best rubber exposition which has yet taken place. Great efforts have been made to have this as comprehensive as possible and to show every phase of this vast industry. There will undoubtedly be the best display of plantation rubber which has yet occurred; for this reason, if for no other, that the plantation feature of the industry is now so much farther advanced than it was at the time of the last show two years ago. And there will also be a wonderful display of manufactured goods. One company alone will show five hundred distinctly different rubber articles made in its factory.

A WEALTH OF TROPHIES AND PRIZES.

An unprecedented number of trophies will be presented on that occasion for excellence in the various branches of this industry. There will be silver cups and gold medals and silver medals, and money prizes—some of them amounting to 100 guineas—for superiority in a great variety of departments, as, for instance: For the greatest variety of articles for commercial use made from rubber; for the best exhibits of rubber flooring; for the best suggestions for new uses of plantation rubber; for the best arrangement of a rubber factory; for the best exhibit of a manufacturing machine; for the best samples of plantation rubber; for the best exhibit of wild rubber; for the best essays on a rubber estate factory; for the best collection of photographs illustrating all departments of rubber estate work, and for excellence in various other departments of planting and manufacture.

IMPORTANT PAPERS AT CONFERENCE.

Jointly with the exposition there will be a rubber conference, at which many valuable papers treating of every phase of the industry will be read by men of acknowledged authority in their particular departments. These papers will be collected and printed in book form.

A NUMBER OF RUBBER MOVING PICTURE SHOWS.

One feature which will interest not only those connected with the rubber industry but especially the casual visitor will be a number of moving picture shows, which may be seen at certain hours during each day in different halls connected with the main exhibition hall. These moving picture displays will show the gathering of rubber in Brazil, the production and preparation of rubber on the plantations and the process of manufacture in some of the large British mills.

THE INDIA RUBBER WORLD WILL BE THERE.

There will be a number of American exhibits, the most important of which—not, to be sure, in size and scope of display but in point of interest to this particular publication—is that of THE INDIA RUBBER WORLD. This will be found at a middle point along the left wall of the building and on the passageway leading to the conference room and also to the club room—a very

convenient place, as those who attend this exhibit may properly be divided into two classes—those in search of the conference room and those in search of the club room—and both will find our booth directly on the way.

THE UNITED STATES RUBBER RECLAIMING EXHIBIT.

Among the notable American exhibits must be mentioned that of the United States Rubber Reclaiming Co., of New York. This company has taken ample space and will give a remarkable exhibit of the reclaiming industry as it is carried on in this country. Samples of reclaimed rubber adaptable to every branch of the rubber industry will be shown, and in order to demonstrate the working characteristics of this class of rubber mills will be in operation. The English manufacturer will undoubtedly be much interested in seeing reclaimed rubber sheeted in any degree of thickness from one-half inch to the very thinnest tissue without the addition of any crude rubber or mineral ingredients. Moreover, there will be apparatus in operation for the testing of rubber chemically, physically and electrically. Some of these machines have never before been seen on the other side. There will also be samples of almost every form of goods (boots, shoes, clothing, tires, wires, etc.) in which reclaimed rubber can be advantageously used. Mr. L. J. Plumb, who has spent many years in the study of vulcanization and devulcanization, will be in general charge of this exhibit and will be able to give inquirers all possible information.

THE RUBBER GROWERS' ASSOCIATION.

The Rubber Growers' Association, of London, invites American visitors to call at its booth and register their London addresses so that they may be included in the general arrangements for the hospitality which this association will extend to visitors during the exhibition, and the association expresses the desire to be of any service whatever to rubber men in London at that time.

ALDEN'S SUCCESSORS, LIMITED.

A new company, Alden's Successors, Limited, has been established at 24 and 25 Great Tower Street, London, to carry on business as rubber importers and merchants in London and Liverpool, and has acquired the whole of the shares in A. H. Alden & Co., Limited. The company has also acquired an interest, to the extent of 75 per cent. of the shares, in Adelbert H. Alden, Limited, of Para and Manaos. The company has an authorized capital of £100,000, of which £60,000 has been issued and is fully paid up in cash. Wm. H. Hildreth, E. Stevenson (directors of A. H. Alden & Co., Limited) and R. Bolten, manager of the rubber department of Bunge & Co., London, will be joint managing directors of the organization.

RESULTS OF GERMAN RUBBER MANUFACTURING COMPANIES.

A statistical return shows that of 29 German rubber companies with a total nominal capital equaling $17,300,000, 17 are either paying no dividends or are in liquidation. The accounts for 1913 being in many cases still open, the rates paid in 1912 will serve for comparison.

Of the twelve more prosperous companies, the Continental takes the lead with 45 per cent. for the three last years, Ph. Penin 25 per cent. for 1912; Excelsior 25 per cent. for 1910, 1911 and 1912, and 18 per cent. for 1913; Münden-Hildesheim and Mannheimer each 10 per cent. The other seven range from 4 per cent. to 7 per cent.

The limited profits in some cases are attributed to the heavy expense of installing machinery and molds for the manufacture of automobile tires. This last-named article, moreover, has been the object of keen competition between French and German makers, while business was likewise affected by the fluctuations in the rubber market.

COMMERCIAL ORGANIZATIONS IN GERMANY.

According to a bulletin lately issued by the Bureau of Foreign and Domestic Commerce at Washington, Germany has two distinct classes of trade organizations. Federal legislation deals with the trade and commerce of the empire regarding specific industries, while the chambers of commerce are regulated by the various states, differing considerably in functions, authority and constitution. There are more than 150 chambers of commerce in Germany, 90 of which are in Prussia, 8 in Bavaria, 8 in Wurtemburg, 9 in Baden, 8 in Saxony, 7 in Hesse, 7 in Alsace-Lorraine, and the remainder in other parts of the empire.

Besides the organizations including all the business men of a district, there is the chamber of commerce in the stricter sense of the word, resembling a board of directors. Of the chambers of commerce 33 have their own buildings.

ALLEGED POISONING AT RUSSIAN RUBBER FACTORY.

Attention has been aroused in Europe by the illness which recently attacked the workers of the "Trëugolnik" rubber factory of St. Petersburg, which was at first attributed to inferiority in the benzine used or to changes in the varnish employed. Those hypotheses were found to be groundless, as no change had been made for years in the benzine, nor in the mode of using it. The "Trëugolnik" company has called attention in the European press to the fact that the sickness first appeared at the 'Prowodnik" works, Riga, and later in the Trëugolnik factory at St. Petersburg. A few days afterwards it broke out at some ten other plants in various lines.

For the investigation of the origin of this illness a special committee of doctors was appointed, who at first were of the opinion that it arose from the inhalation of benzine, but when it was taken into consideration that cases had occurred in factories where no benzine was used they arrived at the conclusion that it was of a nervous character.

In reviewing the question Dr. Fritz Frank and Dr. Edward Marckwald of Berlin, express the opinion that while the illness took the form of fainting and suffocation, such attacks could not have been caused by benzine, particularly if the needful precautions had been taken for ventilation and for the absorption of the gases. A final verdict depends on the result of further investigations.

FRENCH IMPORTS AND EXPORTS OF RUBBER MANUFACTURES.

Statistics for 1913 show French imports in belting, hose, valves and other mechanical goods of rubber combined, or not, with fabrics or other materials, to have been 1,314 tons, value equal to $2,365,000. French exports under the same classification were 1,509 tons, value $2,935,000.

Imports of rubber thread (vulcanized) in 1913 were 197 tons, value $786,800.

Imports of elastic fabrics in 1913 were 90 tons, value $398,200, exports being 144 tons, value $587,200.

Imports of piece goods in 1913 were 56 tons, value $146,200, and exports 35 tons, value $90,600.

Imports of dress shields for 1913 were 21 tons, value $100,800.

Imports of braces, garters and hose supporters for 1913 were 6 tons, value $32,600.

Imports of card clothing for 1913 were 26 tons, value $52,400, exports being 3¼ tons, value $7,800.

Imports of rubberized clothing for 1913 were 34 tons, value $150,400, exports being 84 tons, value $394,200.

Imports of rubber footwear for 1913 were 153 tons, value $245,200, exports being 66 tons, value $100,400.

Imports of tires for 1913 were 1,310 tons, value $4,976,800, exports being 4,993 tons, value $17,826,000.

The Hackethal Wire Co., Hanover, has declared a dividend of 16 per cent. for 1913, as compared with 14 per cent. for 1912.

International Rubber Congress and Exhibition at Batavia.

THE INDIA RUBBER WORLD'S NEW SILVER CUP.

THE photographic reproduction shown below gives some idea of the silver cup offered by THE INDIA RUBBER WORLD to be presented at the International Rubber Congress at Batavia next September for the best method of extracting gutta percha. The cup is of solid silver, heavy, gold lined and stands 13 inches high and is 13 inches across, including the two handles. It rests upon an ebony pedestal, and its height including the pedestal is about 20 inches. As the illustration shows, it is a handsome trophy, and it will undoubtedly be competed for with a great deal of zest. The face of the cup has an embossed design showing gutta percha leaves on the two sides, between which is the following inscription: "The India Rubber World Trophy for the Best System of Extracting Gutta Percha. International Rubber Exhibition, Batavia, Java, 1914."

THE INDIA RUBBER WORLD CUP FOR THE BATAVIA EXHIBITION.

The date appointed for this year's Batavia Rubber Congress and Exhibition is now sufficiently near to allow of definite arrangements being made for both events, the former lasting from September 7 to 12 and the latter running from September 8 to October 10. Thus during the first week of the exhibition it will be taking place concurrently with the Congress.

As those most interested in the subject of rubber will in many cases be paying their first visit to Java, they will appreciate the "Guide to Visitors" published by the exhibition authorities, a copy of which has come to hand. This interesting handbook contains a number of artistic illustrations showing the main exhibition buildings, the official tourist bureau and various scenic features of the island of Java, which will be new to many readers. It likewise includes plans of Batavia, as well as of the exhibition grounds and buildings and a view of old Batavia.

OFFICIALS AND COMMITTEES.

Among the principal government officials are: The Prince of the Netherlands (Patron); the Dutch Ministers for Foreign Affairs and the Colonies and the Governor General of Netherlands India (Honorary Presidents); H. J. Lovink, Director of Agriculture (Government Commissioner). The chief local officials are: Major-General (retired) J. G. H. de Voogt, president of Executive Committee; T. Ottolander, first vice-president; Dr. W. R. Tromp de Haas, second vice-president; J. Lieftinck, LL. D., secretary general, and A. F. Marmelstein, president of Finance Committee.

The exhibition jury will consist of five sections, embracing the following subdivisions: Section 1, botany, diseases, literature and scientific testing methods; section 2, cultivation, tapping and preparation; section 3, wild rubbers, substitutes and gutta percha; section 4, economy, trade and statistics; section 5, vulcanized caoutchouc. It is of interest to note that Dr. Tromp de Haas, whose name is well known as a rubber expert, will preside over the second section, dealing with cultivation, tapping and preparation.

Influential committees have been formed in Holland, England and Australia, as well as at Singapore and Bangkok. The English committee includes Professor Dunstan, as well as Messrs. S. Figgis, Arthur Lampard, Herbert Wright and Hamel Smith; while on the Netherlands committee are J. F. de Beaufort, president of the Amsterdam Society for the Rubber Trade; A. G. N. Swart, LL. D., and E. Joosten, of Joosten & Janssen, Amsterdam. Leon Osterrieth, of Antwerp, has been appointed delegate for Belgium.

SUMMARY OF PAPERS.

Accompanying the guide book is a summary of the papers in preparation for the Congress, either to be read or included in the official summary to be issued as a souvenir of the occasion. These papers, about eighty in number, are divided into the general heads of Botany and Phytopathology (13 papers), Climate and Soil (3 papers), Cultivation and Tapping (21 papers), Preparation and Chemistry of Rubber (24 papers), Wild Rubber (8 papers),

OLD BATAVIA.

Economical Questions and Commerce (1 paper with 4 subdivisions).

While the full program of the Congress is to be published later, the summary states that addresses will be delivered by some well-known authorities, a definite agreement having already been made.

Among the speakers who will deliver addresses are: Prof. F. Went, Utrecht; Henry C. Pearson, editor of THE INDIA RUBBER WORLD, New York, and Prof. Edwin Baur, Berlin. The subject announced for Mr. Pearson's address is: "What Manufacturers Desire in Crude Rubber."

EXCURSIONS.

It is intended during the week following the Congress, that is, September 12 to 19, to organize several excursions to well-known rubber estates in West Java, including a visit to the government Botanical Gardens. Besides estates planted with *Hevea*, others where *Ficus* is growing will also be visited. This matter is in the hands of a local subcommittee.

The program will be replete with interesting features of much importance to the rubber industry.

PRELIMINARY PROGRAM OF THE BATAVIA RUBBER CONGRESS.

THE preliminary program of the International Rubber Congress to be held at Batavia, Java, from September 7 to 12 of the present year is a notable one. This program, copies of which may be obtained on application to Dr. A. A. L. Rutgers, second secretary of the Congress Committee, Buitenzorg, Java, and mention of which was made on page 385 of our April number, is given below:

MONDAY, SEPTEMBER 7: Address by Prof. F. A. F. C. Went, of Utrecht University, on "Science and Tropical Cultivation."

Address by Henry C. Pearson, New York, on "What Manufacturers Desire in Crude Rubber."

TUESDAY, SEPTEMBER 8: Address by Prof. Erwin Baur, of Berlin University, on "The Progress of Investigations as to Heredity and Their Importance for the Raising of Tropical Cultivated Plants, Particularly of Rubber Plants."

Discussion on "Selection of *Hevea*." Introductory paper by Dr. P. J. S. Cramer, Buitenzorg.

Discussion on "Diseases and Pests of *Hevea*." Introductory papers by Dr. C. J. J. van Hall, Buitenzorg; Dr. A. A. L. Rutgers, Buitenzorg, and A. Sharples, Kuala Lumpur.

WEDNESDAY, SEPTEMBER 9: Address by Dr. Schüffner, of the Medical Institute, Medan, Deli, on "Hygienic Measures."

Discussion on "Catch Crops and Intercrops." Introductory papers by Dr. Th. Wurth and Dr. P. Arens, Malang, Java; Dr. C. J. J. van Hall, Buitenzorg; Dr. J. W. Gallagher, Deli, Sumatra, and R. W. Munro, Morib, Selangor.

Discussion on Planting Distances and Thinning Out." Introductory papers by C. M. Hamaker, Kiara, Pajoeng, Java, and the Hon. E. B. Skinner, Kuala Lumpur.

Discussion on "Artificial Fertilisers and Green Manures for *Hevea*." Introductory papers by Dr. A. W. K. deJong, Buitenzorg; Mr. Callandar, Kalthur, Ceylon; M. Barrowcliff, Kuala Lumpur, and F. G. Spring, Kuala Lumpur.

THURSDAY, SEPTEMBER 10: Discussion on "Tapping and Tapping Systems." Introductory papers by Dr. A. W. K. de Jong, Buitenzorg, and F. G. Spring.

Discussion on "Preparation of Rubber." Introductory papers by Dr. A. J. Ultée, Djember, Java; B. J. Eaton, Kuala Lumpur; Stafford Whitby, Kajang, and Sydney Morgan, F. M. S.

Evening address on the "Collection of Rubber in Brazil," by Dr. P. J. S. Cramer, Buitenzorg.

FRIDAY, SEPTEMBER 11: Discussion on the "Reduction of Cost Price of Rubber." How to realize it. Introductory papers by E. A. O. Vervooren, Bandoeng, Java, and E. Macfadyen, F. M. S.

Demonstration of the "Scientific Methods of Rubber Testing," on the Exhibition grounds, by B. J. Eaton, Kuala Lumpur, Prof. G. van Iterson and J. G. Fol, Delft, Holland.

SATURDAY, SEPTEMBER 12: Address by J. G. Fol, Delft, on "The Results on Scientific Testing of the Empirical Appreciation of Raw Rubber." Discussion on "Methods of Testing Raw Rubber."

Introductory papers by J. G. Fol, Delft; B. J. Eaton, Kuala Lumpur, and Dr. W. R. Tromp de Haas, Buitenzorg.

AMANI AGRICULTURAL INSTITUTE, GERMAN EAST AFRICA.

This institute made considerable additions to its plantations during the year 1912-1913; this development allowing of an enlarged distribution of seeds and plants. As the cultivation of *Manihot* does not seem to have been successful, the demand for seeds of that variety has fallen off.

On the other hand, *Hevea Brasiliensis* has been developed in a very satisfactory manner, producing an abundance of seeds, which, as well as plants, were freely distributed.

Kickxia elastica grew well, but the demand for seeds exhibited a falling off. *Ficus elastica* showed good development, but only the small-leaved variety coming from Sumatra is available for rubber. The older *Castilloas*, which yielded an inferior rubber, have been to a great extent cut down and the land used for the cultivation of other varieties.

Rubber vines have been planted at Amani, where the large-leaved varieties have thriven better than the small leaved, which only produce a limited amount of foliage after five years.

The various kinds of *Palaquium* (gutta percha) have made fair progress, but there has been no marked increase in quantity, as there was no propagation by slips.

WASHING LOSSES ON EAST AFRICAN RUBBER.

The report of the Biological Agricultural Institute, Amani (German East Africa) for the year 1912-1913, states that various samples of *Manihot* rubber mostly came for testing as to loss in washing, the investigation of chemical composition not being a matter at present required. One sample from Udjidji showed loss in washing 21.6 per cent., resin 10 per cent. and albumen 4.6 per cent.; being somewhat high in resin, but otherwise normal. Scrap rubber from Morogoro showed loss in washing 27 per cent., while balls from the same source gave losses of 37.8 per cent., and 34.6 per cent. The balls showed traces of larvae deposited by a moth.

RUBBER IN SOUTHERN KAMERUN.

From the annual report of the Hamburg Association of West African Merchants, it would seem that the fall of rubber has led to a collapse of the economic life of Southern Kamerun, which is wholly dependent upon the production of rubber. Business was in many instances arrested or restricted. It is anticipated that the development of the colony will be set back for years.

The government has expressed its readiness to convert the export tax of about 5 cents per pound into a graduated tax, according to value. At the same time no duty would be levied when the market price did not approach a remunerative basis.

PROPOSED AMALGAMATION OF SOUTHERN INDIA COMPANIES.

Recent advices from London report negotiations for the amalgamation of three Southern India companies, the Travancore, Orkaden River and Paloor. Their respective capitals are £40,000, £25,000 and £40,000, their areas being 1,738, 779 and 474 acres.

The three properties together would, it is considered, form a complete and compact estate. Another advantage would be that the amalgamation would open a market for the shares of the companies, which are individually too small for that purpose.

THE WORST OVER.

In the view of the "Financial Times" of London, recently expressed, rubber has seen its worst days. It is added that the price may ultimately reach 1s. 6d. (36.49 cents) with a less disastrous effect on plantation companies than when it went down to 2s. (48.65 cents) in September last. Remarkable economies have been made in working costs, while allowances to reserve and depreciation funds have taken a prominent place. Conservatism is also being shown in restricted tapping and in greater attention to questions of preparing rubber; all tending to the establishment of the industry on a sound financial basis.

Some Rubber Planting Notes.

DIRECT RUBBER SHIPMENTS FROM MALAYA TO NEW YORK.

INTEREST has been manifested in Malaya as to the permanence of the service between Port Swettenham and New York, inaugurated at the end of March by the steamer *Indradeo*. In discussing this subject the "Malay Mail" remarks that if the advantages of direct shipments are as great as represented certain of the plantation companies will doubtless be found anxious to avail themselves of this method of getting their rubber to New York. With the increasing Malayan production, any means of broadening the market would be of great value.

POSSIBLE REDUCTION IN F. M. S. RUBBER EXPORT DUTY.

A rumor current in the Federated Malay States is to the effect that the government is considering a proposal for a reduction in the present rate of rubber export duty (now 2½ per cent.), whenever the article falls below a certain price.

RUBBER SECTION AT PENANG CHAMBER OF COMMERCE.

In the May issue (page 451) the establishment of the "Singapore Chamber of Commerce Rubber Association" was referred to. A similar association is reported to have been formed at Penang, though that port only shipped last year about 20 per cent. of the total from Malaya, against about 40 per cent. each from Singapore and Port Swettenham.

COLOMBO AND SINGAPORE THE FUTURE RUBBER MARKETS.

At the last meeting of the Chersonese (F. M. S.) Estates, Ltd., Mr. Noel Trotter, the chairman, dwelt on the present tendency to sell rubber in the East which might otherwise come to London, and thus avoid the heavy charges at that port. These conditions would accelerate the arrival of the time when Singapore and Colombo would become, as he believed they would, the most important rubber markets of the world. This question would, he anticipated, have to be dealt with by the sterling companies when their financial conditions become more settled.

A PAPUAN PLANTER ON RUBBER.

Mr. Carl Ettling, manager of the Dedele plantation, East Central Division, Papua, recently visited Ceylon, spending a short time at Peradeniya. The special object of his visit was to obtain information about a root fungoid disease of the coconut palm, which had appeared in Papua.

He stated that while there are a few thousand acres in Papua under Pará rubber, planters have gone in more for coconuts. Rubber has done well, however, on the Seguera plantation opened by Mr. Ballantyne, retired treasurer of Papua, about seven years ago. The plantation is at an elevation of about 2,400 feet, the trees showing a wonderful growth, and being interplanted with coffee. Coconut cultivation seems to be in the ascendant in Papua.

SYSTEMATIC TROPICAL AGRICULTURE.

In commenting upon the fact that the development of systematic agriculture was earlier in temperate regions than the tropics, the "Journal of the Jamaica Agricultural Society" remarks that more has become known within the last few years as to the cultivation, tapping and curing of rubber than was ever known before.

While the closest attention has been paid to Pará rubber, there is little definitely known about the *Castilloa* tree, processes of tapping it being of an experimental character.

CEYLON COMPANY REGISTRATION.

The report of the Registrar General of Ceylon for the period from July 1, 1912, to December 1, 1913, shows the registration within the period named of 23 companies, with an aggregate capital equalling $6,576,300. At the date of the report, 221 companies were on the register, of which six were in process of liquidation.

Applications were received during the period named for the registration of 192 trade marks in 238 classes. Of these 168 were granted.

DUNLOPS INVESTIGATING CEYLON CONDITIONS.

A group representing the Dunlop Rubber Co., including Messrs. Worthington (technical expert of the company), Hughes and Moesinger, recently passed several weeks in Ceylon. Their object was to learn how rubber was prepared. Before leaving for home they expressed the opinion that the less rubber was treated the better. In Mr. Hughes' view, were it possible to obviate the treatment of the article (practised largely to secure the higher price obtainable for clean rubber) it would be possible to get a fairly standard quality.

With regard to the company's estate at Bibile, they are not going to install machinery until quite certain of what is wanted. As to the various patent methods of curing, Mr. Hughes expressed satisfaction with the rubber turned out, but he was dubious as to their capacity for dealing with the production of large estates of, say, a couple of thousand acres or so.

The Dunlop company has opened a branch at 14 Baillie street, Colombo, where a stock of tires as well as of golf balls will be carried.

ASSISTANT RUBBER EXPERT FOR CEYLON.

At a recent conference, held at Colombo, of local members of the Rubber Growers' Association, the Rubber Research Committee and certain government experts, it was decided to bring out a physiological botanist to help Mr. K. Marsden in rubber research. This decision was reached on the suggestion of Mr. R. N. Lyne, Director General of Agriculture.

EDWARD VALENTINE CAREY.

Much regret has been expressed at the death in England of Edward Valentine Carey, formerly of Ceylon, but for more than 20 years interested in the Carey and Jugra estates, two prominent Straits companies, of which he was the chief promoter.

COMPARISON BETWEEN CEYLON AND STRAITS CONDITIONS.

In a comparison between the present situation of rubber cultivation in Ceylon and Malaya, Mr. Joseph Fraser, the well-known visiting agent, has reported that the best yields he found in 1913 were in the F. M. S., where two fields aggregating 134½ acres gave respectively 740 and 631 pounds per acre. The average yield of the estate was 418 pounds per acre, produced at a cost of 7 pence sterling (14.19 cents) per pound; this being the lowest cost he knew of in the F. M. S., which fact he commended to the notice of Ceylon planters. In this calculation no allowance is made for upkeep of immature areas and capital expenditure.

DUTCH PLANTER DISCOVERS PROCESS OF RESTORING TACKY RUBBER.

A process has been discovered by Mr. J. Kooij, an assistant at the Branggah Banaran rubber estate, near Wlingi (Java), for restoring tacky rubber to its normal condition. The samples are being sent to Professor Iterson of the laboratory at Delft (Holland), to find whether they are vulcanizable.

BRAZIL CONTINUES PREFERENCE TO AMERICAN RUBBER GOODS.

BY the decree of January 17, 1914, Brazil continues for the current year the preferential tariff reduction of 20 per cent. on all rubber goods imported from the United States. Below is the regular Brazilian tariff schedule on rubber goods manufactured in the United States, to which this reduction applies.

BRAZILIAN TARIFF ON RUBBER GOODS.

From which 20 per cent. is to be deducted during 1914.

Equivalents.

Milreis (1,000 Reis), (gold), 54.6 cents; Paper, 32.4 cents; Kilo, 2.2 lbs. (Duties on most articles payable 65 per cent. in paper and 35 per cent. in gold.)

Description of goods.	Full duty per kilogram, in Reis.	Percentage of duty levied.	Tare allowance.
Manufactures of rubber, gutta percha, vulcanized or not—			
Funnels, capsules and bottles..	2,600	50	Cases or boxes of cardboard, or similar packages, gross.
Sticks, whips and similar articles	5,000	50	do.
Tobacco pouches, tips of walking sticks and match box covers	4,000	50	do.
Dolls, toys and similar articles	3,500	50	do.
Buttons of all kinds	4,000	50	do.
Footwear	3,000	50	do.
Machine packing	1,000	50	do.
Combs, rulers and penholders.	4,000	50	do.
Fans, each	3,000	50	do.
Belts, braces, garters, cords, ribbons and plaits—			
Covered with pure or mixed silk	30,000	50	With the exception of cardboard cases, gross.
Covered with any other material	7,000	50	Cases or boxes of cardboard, or similar packages, gross.
Preparation or composition for dentists	3,200	50	do.
Bracelets, earrings, lockets and other articles of adornment.	10,000	50	do.
Stems and tubes for flowers...	7,000	50	do.
Combined with tissues of cotton, wool or linen—			
In the piece or in cuttings..	4,000	50	do.
In articles not specially mentioned	7,000	50	do.
Combined with tissues of pure or mixed silk—			
In the piece or in cuttings..	7,000	50	do.
In articles not specially mentioned	15,000	50	do.
Hose, threads, leaves or sheets	1,200	50	do.
Door mats	1,300	50	do.
Not specially mentioned.....ad valorem		50	

ENGLISH REPORT ON BRAZILIAN CONDITIONS.

In an official report the British Consul at Pará lately stated that under the stress of the severe competition and cost of collection and transport, it is likely that all but the finest rubber will disappear from the Pará market and that the greatest care will have to be taken in purifying even the best grade. He further remarks that while the Amazon district is one vast forest, the greater part of the wood for export rubber boxes is imported from the United States.

The natural—and only—remedy would be, it is added, to remove every charge of export or other taxes on products leaving the country, and to abolish all import duties on food and other necessaries of life.

THE PROPOSED BRAZILIAN LOAN.

According to the Paris financial press, there are three interests concerned in the Brazilian loan of $100,000,000, now under negotiation in the British and French capitals. These three interests are the Brazilian government, the French banking syndicate and the group of English bankers represented by the Rothschilds. The points which are specially leading to controversy are said to be the request for a special guarantee, and the organization of some form of European control over Brazilian finances. Such a guarantee would, it is considered, depreciate the older Brazilian loans, in which English investors have large holdings.

The Bolivian Congress recently passed a surtax of 15 per cent. on all goods subject to import duty.

RUBBER NOTES FROM DUTCH GUIANA.

By Our Regular Correspondent.

IT is interesting to report that balata produced in the colony from January to March 31, shows an increase of 8,108 kilograms (17,838 pounds) over the production for the same period during 1913. The official records are as follows: Balata production, January to March 31, 1913, 86,775 kilograms (190,905 pounds); same period 1914, 94,883 kilograms (208,742 pounds). The weather has been very favorable for gathering and drying the product during this period and, if conditions are equal, predictions of a record crop this year will without a doubt be fulfilled. The proposed general regulations governing the industry have been published; whether the Colonial States will pass them is a question.

The two largest and most important balata concerns in Dutch Guiana have amalgamated, being represented by C. S. J. Struycken de Roysancour. These concerns are Balata Compagnie Suriname and Balata Compagnie Guyana. The united companies have acquired commodious new offices, where operations on a very large scale will be carried on.

Ter Saag & Co. are reported to have produced last year, by felling of the trees, seven tons of balata. It is understood that most of the trees had suffered almost complete destruction from previous indiscriminate tapping. If this information is correct the company is to be congratulated, for the felling system is certainly unpopular among the majority of bleeders and others. It is also said in balata circles that they have transferred certain of their concessions to a London syndicate.

The Colonial States are considering an attempt to impress upon the mother country the absolute necessity of extending the railroad to the Lawa district, and then perhaps to Brazil. The present railroad starts at Paramaribo, the capital, and terminates at a point called "Dam," on the Sara Creek. If this line were extended to the border of Brazil or even, say, to the Lawa, it would penetrate a region abounding in balata producing trees and wild rubber, *Hevea Guyanensis*. Not alone would the extension of the line benefit the balata industry, but the rich forests of all sorts of timber would be reached that today are practically useless to the country. The gold industry would also receive more attention, for in these regions this precious metal is freely distributed. The development of all this natural wealth would tend to the making of the country, which, from its strategical position on the northern coast of South America, is an ideal land for the capitalist.

Ten years ago, when the Dutch Government at the Hague voted an amount to construct the Hinterland railway to the Lawa district, it was decided to run the line to a point somewhere near the Cie. Des Mines D'or. Had this been done, today there would be little chance of our neighbor, British Guiana, carrying her frontier railway scheme through, for the simple reason that the advantages that colony is about to gain would now have been Dutch Guiana's. British Guiana, governed by a man of constructive ability and a thorough business man, has not been slow to take advantage of the position, and the Dutchman now "wakes up" to a realization of his stupidity.

The despatch of His Excellency, Sir Walter Egerton, to the Secretary of State for the Colonies, published in part in THE INDIA RUBBER WORLD of April—page 386—is a masterful document and shows the writer to be possessed of a large degree of energy, foresight and judgment. The scheme outlined in the despatch is a bold one, but its feasibility is beyond question. To my mind, however, there is an impediment, the consideration of which I shall defer to the latter part of my letter. During the years I have been in French Guiana and latterly in Dutch Guiana, I have been observing

the trend of opinion in relation to railway construction to Brazil, and have discovered that there is a smoldering desire among the colonists which is crystallizing into a determination to be some day connected with Brazil by railway. About two years ago the French firm of Hesse & Co., of Paris, requested and obtained from the Government of French Guiana permission to construct a railway from Cayenne to St. Laurent and thence to the Mini gold fields, which are situated near the southern boundary of the colony. This firm, which is busily engaged at the present moment in making the preliminary survey between Cayenne and St. Laurent, is both wealthy and energetic and being associated with some of the richest men in France can, therefore, find all the capital required if it is decided to carry through this project. In June last I met at Paramaribo a Mr. Alexis Troissart, representative of Messrs. Rothschild, of Paris, who was on his way to French Guiana to study the *pros* and *cons* of railway construction in that colony.

Dutch Guiana has already constructed about a hundred miles of railway, which runs into the heart of the country, and consequently has a start, and a very long one, on the other Guianas. Whether she will take advantage of her costly-bought and premier position is hard to say, but there is a strong under current of opinion, occasionally expressed, that the objective should be Brazil; and the outcome of this may one day be to force the powers that be to turn it into a reality. These Netherlanders who are guiding the destinies of Dutch Guiana have for centuries demonstrated their ability to do, having won a country from the ocean by their gigantic engineering constructions, and made it one of the most wealthy and prosperous by their commercial ability. Hence they must not be left unconsidered. Should they decide to undertake such a project it would not be long before it would be carried through.

I may state that Sir Walter Egerton's scheme has met with the admiration of the colonists of the sister Guianas and has given them a feeling of emulation, so that one is likely to see in the near future a healthy rivalry between them as to which will be first to touch the Brazilian frontier with a railway. British Guiana, being in actual possession of a master-mind, only needs the undivided support and co-operation of her people to assure her a good run in what is likely to become a race to Brazil. The impediment referred to above is the diplomatic side of the project. Brazil can make such a project a success or a failure, and it would be taking too big a chance to build such a railway—that is, if the Brazilian-Amazon trade is the *sine qua non* of success—without first coming to some diplomatic arrangement with that country. Nothing in His Excellency's despatch shows that any such present or future arrangement is contemplated, and to me it seems to be of paramount consideration, as the following excerpt from the despatch will show: "At present the city of Manaos only offers a limited and uncertain demand, and a heavy duty shuts out colonial cattle from even that market."

It is far from my intention to enter into any discussion as to whether the development of subsidiary industries and the gold and diamond fields, the establishment of towns and the consequent traffic thus created, the transport of cattle and timber, the exploitation of balata and other forest products, would pay the working expenses and interest on capital within ten, twenty-five, or even a hundred years, but of this I am sure, that were the government to satisfactorily demonstrate to Brazil the incalculable advantages and benefits that would accrue to the many interests engaged in the upper reaches of the Amazon, and thereby gain her co-operation, the success of the project would be assured. One must not forget that there are powerful interests at stake. Pará has been made by the Amazon and only a decade ago the flourishing and wealthy city of Manaos was built to cope with the increasing river trade. Last, but of considerable importance, is the Amazon Navigation Co., with no fewer than 300 steamers. These vast interests will do all they can to nullify such an enterprise, so as to keep trade in the present channel

LABORER TAPPING BALATA TREE WITH GONGGRIJP'S TAP-HOOK.

Perhaps it may be thought that the precaution urged is only the croakings of a pessimistic mind, or the officious endeavor of an outsider to dim the silver lining behind Demerara's dark cloud, now apparently about to pass away. To those so minded let me hasten to give the assurance that as a native of British Guiana—altho a wanderer for years—I appreciate the words "This is my own, my native land," and that my warning is called forth by the desire to see my native land in possession of a flourishing and wealthy enterprise instead of a dearly bought "white elephant."

As will be seen by the above, a railroad to the Brazilian borders is the desire of the three Guianas, and, as Dutch Guiana already has about 100 miles open for traffic, the distance now to be constructed would give her the leading position, especially with the opening of the Panama Canal next year. If the Dutch Government could only be made to realize the benefits to be derived by spending the necessary money in completing this grand enterprise, it would not hesitate to take advantage of the situation and "make hay while the sun shines."

The capital popularly subscribed in the London market during 1913 for the purpose of investment in rubber securities—Indian, colonial and foreign—amounted to $6,754,435, or $6,483,395 less than similar subscriptions of the preceding year.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

THE annual report of Professor Harrison, Director of Science and Agriculture, which has just been issued, contains a record of steady, if slow, progress in the rubber industry. At present it seems that the tapping of the indigenous balata trees offers more attractions to capitalists than the establishment of rubber plantations, in spite of the fact that the heads of the Agricultural Department have publicly announced that there are nine million acres of easily accessible lands in the colony eminently suitable to rubber cultivation. The total number of acres planted is still only 3,139 acres, against 2,259 acres and 1,740 acres for the two years preceding, revealing progress, but not as rapid progress as the suitability of the climate would have justified. Of this acreage, 435 acres are on the west coast of Demerara, 184 acres on the west bank of the Demerara River, 160 acres on the east bank of the Demerara River, 175 acres on the higher reaches of the Demerara River, 914 acres in the Essequibo River district (the larger proportion of which probably belongs to the Bartica Agricultural Estates, Limited, an American corporation), and 665 acres in the northwest district.

POPULARITY OF PARA RUBBER—FAILURE OF SAPIUM.

Professor Harrison, dealing with the state of cultivation in his report, says: "The rubber industry continued slowly to expand; 3,139 acres are now under rubber, including at least 2,800 acres of Pará rubber. The quality of rubber was good and the yields satisfactory. The growth of Pará rubber trees was satisfactory where they were planted under suitable conditions. The trees were free from any serious pests or diseases during the year, and were but little affected by the severe drought. The rate of growth was lessened during the drought, but not to the extent anticipated, the plants remaining in a vigorous condition, except in wind-swept situations in the coastal regions. The trees planted out in 1906-7 flowered in many districts in the colony and supplies of seeds were available in the Canje, Berbico, Demerara, Pomeroon and Aruka river districts. The Department imported 190,240 Pará rubber seeds from Ceylon and the Straits Settlements, from which 119,240 plants were raised. Several firms imported stumps from Ceylon and from Surinam. These stumps were inspected at the Port of Entry, and all of them (114,200) were found to be free from disease. Some further experiments were carried out with *Sapium* rubber, but it is evident that there is no outlook for this kind of rubber. Young trees give very low yields, while the rubber has to be collected largely, if not entirely, as scrap. This cannot be commercially remunerative and no further extension of planting of *Sapium* will take place. The greater part, if not the whole, of that planted will have to be abandoned as a total loss."

SOME TAPPING RESULTS.

Dealing with the work at Issororo Experiment Station, Professor Harrison says that the cultivation has made satisfactory progress, as the average girth at three feet from the ground of the five-year-old Pará rubber trees was 19 inches in February, 1913, their average girth in February, 1912, being 15 inches. In accordance with directions issued by the Board of Agriculture tapping experiments were commenced with Pará and *Sapium* rubbers in June, 1912. The yields from the *Sapium* trees were most unsatisfactory, the young trees yielding rubber only in scrap form. Those with Pará rubber were most satisfactory, but owing to the inexperience of the tappers, the rubber obtained per tree was low, averaging only one-fifth of a pound of dry rubber per tree during the period over which the tapping extended (seven months). The results for 1913-14 are far more satisfactory, a return of 2½ lbs. of dry rubber per tree per annum being obtained.

REPORTS ON SAMPLES SENT TO LONDON.

Samples from Issororo were sent to the Imperial Institute, which reported as follows: *Para Rubber Biscuits.*—From 4½ to 5-year-old trees at Issororo. Weight, 1 lb. 3 ozs. Small thin biscuits, light brown to a reddish brown in color, clean and in good condition. The rubber was slightly weak, but, considering the age of the trees from which it was obtained, its physical properties must be regarded as quite satisfactory. *Results of Examination.*—Loss on washing (moisture and impurities) 1.0 per cent.

Composition of Dry Washed Rubber.

Caoutchouc	95.3 per cent.
Resin	2.0 "
Proteid	2.5 "
Ash	0.2 "

This rubber is very satisfactory in chemical composition, containing over 95 per cent. of caoutchouc in the dry material, and in this respect it is quite equal to plantation Pará rubber from the East. The strength of the rubber will no doubt improve as the trees become older and the product will then be of excellent quality.

NO DEMAND FOR MANIHOT GLAZIOVII, CASTILLOA OR FUNTUMIA.

The report upon the "Economic Work" at the Botanic Gardens states that during the year 151,927 seeds were imported from Singapore, of which 96,059 germinated, a percentage of 63.22 per cent., and that 40,000 seeds were imported from Ceylon, of which 23,184 germinated, a percentage of 56.82 per cent.; a total of 192,927 seeds, of which 119,243 germinated. During the year of a total of 68,992 economic plants sold from the Botanic Gardens, 51,058 were *Hevea* rubber plants. *Manihot Glaziovii* continued to produce seed, but there was no demand for it or for plants, nor for *Castilloa, Sapium* or *Funtumia.*

INSECT PESTS.

The Government Economic Biologist, G. E. Bodkin, issues a separate report upon insect pests attacking cultivation. He states: "Heavy infestation of the larvae of the well-known Cassava hawk moth (Dilophonoto ello) ocurred early in the year and the Pará and other rubber trees in most districts received a serious setback through continuous defoliation by these caterpillars." He adds: "This moth will attack nearly every species of plant belonging to the family *Euphorbiacae* and is thus well able to complete its life history on the plants growing in the native forest and on waste or uncultivated lands. A very thorough investigation was conducted into methods of elimination of this pest. Spraying with a mixture of lead arsenate and water at the rate of 4 lbs. of lead arsenate to 50 gallons of water was found to be the most effective method where large areas were concerned. Hand-picking the larvae in small areas was also found effective. This pest increased in numbers in a most alarming way and most serious results were anticipated. Fortunately, however, the appearance of a small egg parasite gradually reduced the pest to normal numbers. Up to the present time *Hevea Brasilienses,* as grown in British Guiana, has shown itself to be a plant peculiarly free from the attack of insects. This immunity from insect attack may safely be taken as a sure index that the trees are making vigorous and healthy growth, for in plant life insect attack is often associated with weak and unhealthy growth."

TAPPING EXPERIMENTS IN BRITISH GUIANA.

The experimental work of tapping indigenous *Hevea* trees is being carried out at the Hills estate, British Guiana, by C. K. Bancroft, assistant director of Science and Agriculture. That variety of rubber tree grows in some abundance at the location indicated.

An organization has been formed among the manufacturers of Sonneberg and Saxe-Meiningen for the purpose of making an exhibit of their products at the Panama-Pacific International Exposition, and government aid has been asked to make this display as elaborate as possible. Representation is also expected from toy manufacturers in other parts of the world.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED APRIL 7, 1914.

No. 1,092,083. Wheel. J. A. Stahle, Boston, Mass., assignor to Stahle Mechanical Tire Co., Limited, of Maine.

1,092,199. Fountain pen. F. M. Ashley, New York.

1,092,353. Rubber tire with leather lining. M. Hallanan, New York.

1,092,368. Fountain pen. H. E. Knies, White Haven, Pa.

1,092,378. Cushion heel and means for attaching same. J. H. Miller, Duluth, Minn.

1,092,419. Non-skid tire. C. T. Adams, New York.

1,092,463. Carrier for pneumatic tire shoes. D. L. Vaughan, Riverton, N. J.

1,092,511. Electrical insulation composition and method of preparing the same. J. W. Aylsworth, assignor to Condensite Co. of America—both of East Orange, N. J.

1,092,512. Process of comminuting phenolic condensation products. J. W. Aylsworth, assignor to Condensite Co. of America—both of East Orange, N. J.

1,092,553. Process of producing dental suction. J. H. Abbott, Philadelphia, Pa.

1,092,554. Suction for dental plates. J. H. Abbott, Philadelphia, Pa.

1,092,566. Tire carrier bracket. T. I. Duffy, assignor to E. C. Sales Co.—both of Chicago, Ill.

1,092,573. Wheel for vehicles. C. L. Heisler, Schenectady, N. Y.

1,092,611. Apparatus for heating inflating gas in balloons. R. H. Upson, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,092,643. Surgical apparatus. M. E. Goolsby, Orlando, Fla.

1,092,684. Syringe. A. E. Wilde, New York.

1,092,699. Compact folding vapor bath cabinet. F. Depenbrock, San Francisco, Cal.

1,092,710. Shaving and lather brush comprising a massage device. D. I. Hartmann, New York.

1,092,753. Reservoir penholder. G. F. Seitz, Philadelphia, Pa.

1,092,761. Waterproofing apparatus. T. F. Tyler, Lawrence, Mass.

1,092,811. Tire carrier. T. I. Duffy, Chicago, Ill.

Trade Marks.

60,890. Perham & Morsbach Co., Chicago, Ill. The words *The Lily Ann*. For dress shields.

66,381. American Asbestos Co., Norristown, Pa. The word *Ambesco*. For packings and gaskets formed of cloth woven from asbestos yarn and belting formed of woven asbestos yarn.

68,277. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn. The words *Top Notch* separated by rugged stump of tree. For rubber footwear of all kinds.

74,824. T. W. Meredith, New York. The word *Myrod*. For leather and other boots, shoes and slippers, including those combining the use of rubber.

75,284. Eberhard Faber, New York. The word *Tinta*. For lead pencils and rubber erasers.

75,377. The Worthington Ball Co., Elyria, Ohio. Illustration of arrow in heavy black effect. For golf balls.

75,709. The McGowan Co., Homestead, Pa. The word *Lightning* in electrical effect. Puncture cure for pneumatic tires.

ISSUED APRIL 14, 1914.

1,092,836. Knee guard comprising two elastic bandages. H. R. Hart, Montclair, N. J., assignor to A. G. Spalding & Bros., New York.

1,092,881. Art of manufacturing combs. F. Wieland, East Rutherford, N. J., assignor to The Arlington Co., New York.

1,092,882. Die for use in the manufacture of combs. F. Wieland, East Rutherford, N. J., assignor to The Arlington Co., New York.

1,092,883. Manufacture of combs. F. Wieland, Poughkeepsie, N. Y., assignor to The Arlington Co., New York.

1,092,884. Manufacture of combs. F. Wieland, Poughkeepsie, N. Y., assignor to The Arlington Co., New York.

1,092,927. Pneumatic rubber tube and metal stem protector. J. M. Majors, Ottumwa, Iowa.

1,092,928. Mat or pad consisting of a strip of elastic material. C. I. E. Mastin, Midland Park, N. J.

1,092,963. Resilient tire. A. Tyler, Wheeling, W. Va.

1,092,981. Vehicle tire. C. H. De Voll, New York, assignor to The American Spring Tire Co., Dover, Del.

1,093,002. Life preserver. J. Magyar, Puritan, Pa.

1,093,006. Lawn sprinkler. C. A. Nelson, Chicago, Ill.

1,093,032. Wearing apparel. F. L. Cadenas, New York.

1,093,071. Tire fastening. J. P. A. Pearson, San Francisco, Cal.

1,093,105. Collapsible core. H. E. Boyd, Akron, and R. B. Koontz, Springfield township, Summit county, Ohio.

1,093,115. Wheel for automobiles, etc. R. E. L. Crosby, Jonesboro, Ark.

1,093,124. Spring wheel. G. W. Graves, M. McCollman and A. P. Gibson, Alderson, W. Va.

1,093,183. Fibrous thread, rubber coated. A. H. Henderson, assignor to The Henderson Rubber Co.—both of Baltimore, Md.

1,093,211. Protective rubber cap, with stoppie, for milk bottles. S. Schulhoff, Philadelphia, Pa.

1,093,234. Felly band and rim for wheels. C. H. Albert, Indianapolis, Ind.

1,093,251. Apparatus for effecting subaqueous irrigation of the bowels. A. Brosch and O. Von Aufschnaiter, Vienna, Austria.

1,093,310. Vehicle tire. S. G. Carkhuff, Akron, Ohio.

1,093,353. Fountain syringe. L. E. Pease, West Somerville, Mass.

1,093,375. Demountable rim. A. R. Behnke, St. Paul, Minn.

1.093,397. Tire valve. W. A. Goetz and W. A. Day, Weaverville, Cal.

1,093,399. Resilient wheel. A. T. Gookin, Cambridge, Mass.

1,093,413. Automobile wheel. H. Hill, Phoenix, Ariz.

1,093,417. Swimming apparatus. M. Hlinka, Cleveland, Ohio.

1,093,448. Resilient wheel. P. F. Marcante, Allentown, Pa.

1,093,455. Tire protector. D. G. Mitchell, Oberon, N. D.

1,093,464. Attachment for pneumatic tire valves. T. J. O'Leary, St. Paul, Minn.

1,093,485. Hand stamp. L. K. Scotford, Chicago, Ill., and Max C. Price, assignors to Hill-Independent Manufacturing Co.—both of Muskegon, Mich.

Design.

45,595. Protective shield. V. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York.

Trade Marks.

60,265. Parker, Stearns & Co., New York. The words *Surf Queen*. For rubber bathing caps.

60,758. Elchemco Manufacturing Co., Jersey City, N. J. The word *Elchemco*. For rubber tires.

74,494. Mulconroy Co., Philadelphia, Pa. The word *Mulconroy*. For metallic hose coverings, hose couplings, hose clamps, hose pipe nozzles, hose nipples, etc.

75,512. Helmuth Voss, Hamburg, Germany. The word *Novapercha*. For a gutta percha substitute.

75,988. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Cougar*. For belting.

75,991. The Goodyear Tire & Rubber Co., Akron, Ohio. The word and number *Hytemp* 200. For belting.

75,992. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Jove*. For belting.

75,993. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Thor*. For belting.

75,994. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Wyoga*. For belting.

ISSUED APRIL 21, 1914.

1,093,616. Sanitary garment protector. V. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York.

1,093,672. Sectional pneumatic tire. J. C. Wilson, Belchertown, Mass.

1,093,712. Fountain pen. E. G. McLeod, Brockton, Mass.

1,093,736. Wheel tire. M. Silva, Provincetown, Mass.

1,093,739. Alarm mechanism for pneumatic-tired wheels. M. F. Stadtmuller, Fort Dodge, Iowa.

1,093,825. Tire tool. G. W. Bryant, New York.

1,093,845. Milking device. M. Goehler, Vancouver, B. C., Canada.

1,093,849. Wheel comprising a plurality of independent rubber annuli. W. T. Harris, Louisville, Ky.

1,093,865. Sanitary shield for dental instruments. C. F. Lauderdale, Portland, Ore.

1,093,902. Resilient wheel tire. T. B. Yeaman, Nashville, Tenn.

1,093,907. Nozzle. H. Birnbaum, Rapid City, S. D.

1,093,923. Process of preparing rubber from hydrocarbons. R. B. Earle, assignor to Hood Rubber Co.—both of Boston, Mass.

1,093,075. Anesthetizer. G. Clark, assignor to The Ohio Chemical & Mfg. Co.—both of Cleveland, Ohio.

1,093,987. Life saving apparatus. T. F. Gleason, Muscatine, Iowa.

1,094,034. A resilient tire. R. E. Sturman, Franklin township, Wright county, Minn.

1,094,052. Demountable rim for vehicle tires. P. B. Bosworth, assignor to Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,094,062. Hand stamp. H. S. Folger, Chicago, Ill., and A. M. Comstock, M. M. Corey and W. Boulthouse, Muskegon, Mich., assignors to The Advance Mfg. & Supply Co., Chicago, Ill.

1,094,084. Rim and tire holder for automobiles. F. C. Miller, Easton, Pa.

1,094,085. Tire holder for automobiles, etc. F. C. Miller, Easton, Pa.

1,094,159. Process of producing keto compounds from ketones and alkylaminomethanes. G. Merling and O. Chrzescinski, Elberfeld, and H. Kohler, Leverkusen, near Cologne, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, Germany.

1,094,160. Process of producing keto compounds from ketones and tetraalkyldiaminomethanes. G. Merling and O. Chrzescinski, Elberfeld, and H. Kohler, Leverkusen, near Cologne, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, Germany.

1,094,164. Combined spreader and clamp for tires. S. E. Nold, assignor to The Aluminum Foundry Co.—both of Alliance, Ohio.

1,094,223. Process for producing isoprene. L. P. Kyriakides, assignor to Hood Rubber Co.—both of Boston, Mass.

1,094,224. Process for producing 1.3-diols. L. P. Kyriakides and R. B. Earle, Cambridge, assignors to Hood Rubber Co., Boston, Mass.

1,094,226. Implement for stopping pneumatic-tired vehicles. C. Le Duc, Chatsworth, N. J.

1,094,253. Fountain bow pen. C. F. Roth, Quincy, Mass.

1,094,307. Armored resilient tire. A. Crowe and R. W. Kidston, Youngstown, Ohio.

1,094,315. Process for producing 1.3-Glycols (B-Glycols). R. B. Earle and L. P. Kyriakides, Cambridge, assignors to Hood Rubber Co., Boston, Mass.

1,094,316. Process for producing 1.3-Glycols. R. B. Earle and L. B. Kyriakides, Cambridge, assignors to Hood Rubber Co., Boston, Mass.

1,094,317. Process of preparing elastic substances. R. B. Earle, Cambridge, assignor to Hood Rubber Co., Boston, Mass.

1,094,325. Manufacture of reinforced inner tubes of pneumatic tires. F. H. Hall, Norton Lindsey, England.

Design.

45,658. Rubber bathing cap. M. J. Stearns, New York, assignor to Parker, Stearns & Co., Brooklyn, N. Y.

Trade Marks.

68,177. The Carbone Co., Inc., Albany, N. Y. The word *Suspension* printed over faint outline of bridge. For vehicle tires composed wholly or in part of rubber.

71,233. C. De Hibbs, Fort Worth, Tex. Illustration of mounted cowboys. For rubber tires.

71,442. E. Krieger, New York. The word *Elco.* For rain coats and rubber coats.

73,069. A. Gumbinner, New York. The word *Model.* For fountain pens.

74,734. National Chicle Concern, New Orleans, La. The words *Creole Mint.* For chewing gum.

76,029. F. H. Fleer Corporation, Philadelphia, Pa. The word *Bobs.* For chewing gum and chewing gum products.

76,578. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn. The letter *B* with *uddy* written through center. For boots and shoes made partly or wholly of rubber.

76,594. A. J. Tower Co., Boston, Mass. The word *Handicoat.* For waterproof coats.

76,606. I. B. Kleinert Rubber Co., New York. The word *Shado.* For dress shields.

ISSUED APRIL 28, 1914.

1,094,467. Method of preparing asbestos fibre for insulating purposes. H. L. Owen, York, Pa., assignor to General Electric Co., New York.

1,094,505. Purification of asbestos. W. R. Whitney, Schenectady, N. Y., assignor to General Electric Co., New York.

1,094,509. Separable rim for automobile wheels. W. M. Wirth, St. Louis, Mo.

1,094,538. Swimming device. J. Davis, Bloomington, Ill.

1,094,539. Process of producing 1.3-Butyleneglycol. K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,094,580. Rubber substitute. H. Mayer, New York.

1,094,616. Resilient vehicle wheel. C. H. Weber, Hilliard, Ohio.

1,094,685. Syringe. A, Spangler, Moline, Ill.

1,094,706. Wheel rim and tire. F. A. Dellert, Brooklyn, N. Y.

1,094,720. Milking machine. H. C. Judson, New York.

1,094,746. Artificial denture. A. Pochwadt, Berlin-Schoneberg, Germany.

1,094,752. Wheel. H. Schlicht, Walnut, Iowa.

1,094,827. Tire protector. F. Wyllys, Atlanta, Mich.

1,094,830. Non-inflammable varnish composition. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.

1,094,853. Method of treating rawhide and the product resulting therefrom. A. H. Henderson, assignor to The Henderson Rubber Co.—both of Baltimore, Md.

1,094,879. Manufacture of rubber hose. H. Z. Cobb, Winchester, Mass.

1,094,956. Vehicle wheel. A. E. Wickman, Willmar, Minn.

1,095,051. Life saving suit. C. G. Walle, New York.

1,095,064. Umbrella protector with a soft rubber cushioning tip. H. C. Anderson and A. P. Kemmer, New York.

1,095,134. Spray nozzle. N. A. Wright, Pontiac, Mich.

Trade Marks.

71,150. The B. F. Goodrich Co., New York. Outline drawing of rubber boot. For rubber boots.

73,958. Scout Gum Co., Inc., Rochester, N. Y. Illustration of black-filled oblong with outline of Indian's head in circle in one corner, outside of which is printed *Ju-Ju.* For chewing gum.

75,061. Paramount Rubber Co., Trenton, N. J. Triangle outline, on right and left sides of which is printed *Para Mount* with initials *P R Co.* intertwining in center. For rubber balls.

76,070. Continental Rubber Works, Erie, Pa. The word *Vitalic* written above word *Tires,* the one letter *T* serving for both words. For pneumatic tires.

76,072. Continental Rubber Works, Erie, Pa. The word *Vitalic* written above word *Tubes,* the one letter *T* serving for both words. For rubber tubes for pneumatic tires.

77,122. A. W. Faber, Stein, near Nuremberg, Germany. The word *Sophomore.* For lead pencils, rubber erasers, etc.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912 and 1913.
**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 1, 1914.]

28,123 (1912). Tools for removing and replacing elastic tires. A. Pass, 26 Leys avenue, Letchworth, Hertfordshire.

28,126 (1912). Repair patches composed of soft unvulcanized rubber. F. Woodgates, Mount View, and T. W. Jourdan, Alsia Brook House—both in Tiverton.

28,134 (1912). Duplex air tubes for wheel tires. A. Green, 15 Windsor Terrace Crescent, and J. H. Green, Cooke Street Iron Works, Chapel street—both in Salford.

28,210 (1912). Artificial leather. L. Lilienfeld, 1 Zeltgasse, Vienna.

28,220 (1912). Tires with rims enclosing air tubes or chambers. J. Donkin, 32 Christchurch Road, Bournemouth.

28,392 (1912). Leather manufacture. W. Spalteholz, 21 Mozartstrasse, Leipzig, and K. Haring, 4 Dippelstrasse, Hersfeld, Hessen-Nassau—both in Germany.

28,408 (1912). Puncture-closing composition. Lootens & Co., and G. Schinckus, 54 Rue Pletinckx, Brussels.

28,453 (1912). Jackets and covers for wheel tires. M. Moses, Caerbont, Llangadock, Carmarthenshire.

28,584 (1912). A machine for removing or loosening the bark from or pieces of the *Landolphia* vine. J. L. Palmer, 18 Ropemaker street, London.

28,589 (1912). Wheel tires with rubber faced wooden blocks. A. R. Hubbard, R. Flay and H. Grossheim, 158a, Norwood Road, West Norwood, London.

28,646 (1912). Watertight electric insulating pluga. Siemens Bros. & Co., Caxton House, Westminster, and W. D. Le Corney, 43 Mount street, Charlton, London.

28,697 (1912). Molding india rubber. E. Smith, Corbar Road, Buxton, Derbyshire.

28,701 (1912). Coating fabrics with adhesive. F. Hansing, 26 Romford Road, Stratford, London, and Fiddes, Todd & Corry, 33 Adelaide street, Belfast.

28,746 (1912). Dress shields. J. H. P. Hurst, 478 High Road, Leyton, London.

28,759 (1912). Elastic cords in exercising apparatus. H. J. Wareham, 28 Gateley Road, Brixton, London.

28,760 (1912). Elastic cord in exercising apparatus. H. J. Wareham, 28 Gateley Road, Brixton, London.

28,769 (1912). Air tube for wheel tires. J. T. Brierley, W. Timperley, and Leyland & Birmingham Rubber Co., Golden Hill Works, Leyland, Lancashire.

28,820 (1912). Sulphates; sulphur. P. A. Newton, 6 Breams Buildings, Chancery Lane, London.

28,821 (1912). Synthetic caoutchouc substances. P. A. Newton, 6 Breams Buildings, Chancery Lane, London.

28,863 (1912). Spring wheels with continuous outer rigid ring and metal springs, other than helical and volute springs. B. Buscaglia, Avenue Verdeil, Lausanne, Switzerland.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 8, 1914.]

*28,968 (1912). Tires with rims enclosing air tubes or chambers. W. H. Crawford, 3301 Grove avenue, Richmond, Va., U. S. A.

29,027 (1912). Tread bands, projections, and surfaces for wheel tires. J. J. Ward, Rocklands, and W. H. Monck, 61 Elm Park Road—both in Finchley, London.

29,030 (1912). Reducing sulphur dioxide. M. Ruthenburg, Electrical Federation Offices, Kingsway, London.

29,040 (1912). Discharge cocks for barrels, etc., fitted with an india rubber washer. B. Jackle, Locherof, Post Dunningen, Wurtemberg, Germany.

29,098 (1912). A boot wiping mat for motor cars, etc., comprising a block of rubber. T. Huet, 112 Boulevard Exelmans, Paris.

29,117 (1912). Lubricators, etc., for calenders and like machines. H. Dootson, 11 Shrewsbury Road, Bolton, Lancashire.

29,173 (1912). Spring wheels with continuous outer rigid ring and metal springs. G. Cauvry and L. Salel, 11 Boulevard Longchamp, Marseilles, France.

29,189 (1912). Tires with rims enclosing air tubes or chambers. E. M. Dubus, 7 Rue Dorée, Melun, France.

29,203 (1912). Tread bands; tyre attachments to rims. A. E. Harvey, 3 Kingsley Road, Cotham, Bristol.

29,215 (1912). Cleaner for driving belts consisting of thin rubber strips. W. O. Larmuth, 41 Norwood avenue, Southport, and Harrington Patent Yarn Evener Co., 19 Dickinson street, Manchester.

29,361 (1912). Vehicle springs of the rubber ring type. L. Laisne, 39 Boulevard Jeanne d'Arc, Douai, France.

*29,365 (1912). Process for producing sulphur. W. A. Hall, 50 E. 41st street, New York.

29,369 (1912). Coagulating and sheeting india rubber. L. Norzagaray, 35 Hargrave Mansions, Hargrave Road, Upper Holloway, London.

29,405 (1912). A hollow metal heel fitted with a detachable tread of india rubber. A. Rokkel, Katharinenstrasse, Jekaterinodar, Kubansches Gebiet, Russia.

29,406 (1912). A puncture proof band for use inside a tire cover or as a tread band. C. P. Theron, Heilbron, Orange Free State, South Africa.

29,471 (1912). A spring core for wheel tire consisting of two or more wire coils coated with rubber. H. L. A. Cognet, 7 Rue du Commandant Lamy, Paris.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 16, 1914.]

29,521 (1912). Leather manufacture; impregnating with rubber, etc. G. Bork, 9 Rheinischestrasse, Dortmund, Germany.

29,532 (1912). A waterproof seat or pad comprising a sheet of fabric lined rubber mounted on a cover of leather. E. J. Griffiths, 16 Station Road, Walsall, Staffordshire.

29,662 (1912). Wheel tires; coupling ropes. T. Slack, Wellington Works, Stockport, Cheshire.

*29,675 (1912). Spring wheels with sectional outer guided members. L. Anderson, R. F. D. 1, Lake Creek, Texas, U. S. A.

29,731 (1912). Speaking tubes. A. Mirams, 157 North street, Brighton.

29,749 (1912). Vulcanizing presses. P. Beer, 7 Gustav-Mullerstrasse, Schoneberg, Berlin.

29,756 (1912). Detachable rim attachments to wheels. L. E. Barbedienne, 12 Mansell Road, Acton, London.

29,768 (1912). Disc wheel adapted to receive a tire carrying rim. C. S. Challiner, 18 Park Range, and J. A. Challiner, "The Glen," Anson Road—both in Victoria Park, Manchester.

29,770 (1912). Cask closure comprising rubber ring. W. Brown, 23 Victoria Park, Saltaire, Shipley; A. Beckett, Whittaker's Buildings, and H. W. Robinson, 134 Harrogate street—both in Bradford, and A. Brindley, New Cottage Farm, Stanningley, Pudsey—all in Yorkshire.

29,777 (1912). Tube joints formed with rubber ferrule. W. S. Tyler, Rhosesmor, Stoke Park, Coventry.

29,783 (1912). Electric junction boxes. British Insulated & Helsby Cables, Ltd., and R. W. Blades, Prescot, Lancashire.

29,794 (1912). Suspensory bandages. C. Balsegur, Belleville-sur-Saone, France.

29,850 (1912). Cushion wheel tires. E. J. Duff, 51 South John street, Liverpool.

29,871 (1912). Inhalers. T. Hughes, 25 Dale street, Stockport, Cheshire.

29,944 (1912). Tire attachments to rims. F. J. Hadfield, Manor House, Ringsfield, Beccles, Suffolk.

*29,950 (1912). Hand stamps. J. A. McClure, 516 Exchange, Empire Kaus, Kansas, U. S. A.

29,954 (1912). A. Tomlins, 21 Churton street, Pimlico, and H. N. Gray, 334 Commercial Road—both in London.

29,958 (1912). Buoyant mattresses. W. W. Caverley, 3328 Quebec street, Vancouver, Canada.

29,982 (1912). Artificial teeth. H. Warnecke, 11 Meter Strasse, Bremen, Germany.

29,997 (1912). Leather manufacture; impregnating with rubber. K. Hartmann, 111 Lindenstrasse, Berlin.

*30,056 (1912). Molding rubber articles. W. Eggers, 294 Taaffe Place, Brooklyn, N. Y., U. S. A.

30,062 (1912). Neckties having elastic collar bands. J. H. Stevenson, 67 The Crescent, Ascot Vale, Victoria, Australia.

*30,069 (1912). Tire, comprising an outer cover and a tubular core. W. J. Woodcock, 102 Gates avenue, Brooklyn, N. Y., U. S. A.

*30,102 (1912). Life belts, etc. W. G. Richardson, 627 Massachusetts avenue, Cambridge, Mass., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 22, 1914.]

37 (1913). Sheeting india rubber. J. Donnelly, 21 Mincing Lane, London.

86 (1913). Waterproofing fishing nets. A. I. Van Vriesland, 22 Kurbrunnenstrasse, Aachen, Germany.

92 (1913). Wearing apparel with elastic supporting band. O. E. Buley, 7 Burbage Road, Herne Hill, London.

164 (1913). A machine for printing on tape and the like and comprising rubber covered printing and impression rollers. O. J. Raush, 3 Denman street, Piccadilly Circus, London.

182 (1913). Siphon bottle with leak preventive washer of rubber. J. R. Trigwell, Rayleigh, Bishop's Park Road, Norbury, London.

223 (1913). Cells for accumulators of galvanic batteries made of compositions containing waste or reformed rubber. W. E. E. Richards, 50 Great Tower street, London.

305 (1913). Dyeing and impregnating textiles, etc. W. R. Von Freiherr, 15 Muenchnerstrasse, Dresden, Saxony.

330 (1913). Films, threads, etc., from viscose solutions. W. P. Thompson, 6 Lord street, Liverpool.

352 (1913). Forming dental plates by means of pressure by india rubber against a die. C. Rauhe, 8 Konigsallee, Dusseldorf, Germany.

*377 (1913). Solid rubber tread band and rim attachment. A. Haller, Sioux City, Iowa, U. S. A.

*385 (1913). Solid rubber tire. F. N. Carhart, Sea Cliff, and A. Van de Water, Glen Cove—both in New York, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 29, 1914.]

391 (1913). Wheel tires. J. P. Tye, 176 East India Dock Road, and C. Hanks, 88 Canton street—both in Poplar, London.

*398 (1913). Spring wheel with rim designed to secure a rubber tire. M. D. Price, Miami, Fla., U. S. A.

*457 (1913). Jackets and covers for tires, air tubes and chambers. M. P. Prince, 458 Beacon street, Boston, and C. M. Bernheimer, 63 High street, Newburyport—both in Massachusetts, U. S. A.

*461 (1913). Pneumatic cushions for use in conjunction with the usual laminated springs for vehicles. C. J. Stovel, Stovel Building, San Francisco, Cal., U. S. A.

467 (1913). Jackets and covers for wheel tires. C. H. Gray, India Rubber, etc., Works Co., Silvertown, Essex, and T. Sloper, Southgate Villas, Devizes, Wiltshire.

521 (1913). Metallic spring bodies so constructed as to support the interior surface of a pneumatic tire outer cover. E. A. Muskett, Warwick Cottage, River View, Chase Side, Enfield, and R. J. Wickham, 74 Southview Road, Hornsey, London.

574 (1913). Blocking hats. B. J. Diaz, Taboua de las Descalzas 6 Pral. izquierda, Madrid.

*592 (1913). Lubricating can comprising ball of rubber. G. W. Cole, Tenafly, N. J., U. S. A.

613 (1913). Rubber substitutes. O. Rohm, 4 Weiterstadterstrasse, Darmstadt, Germany.

623 (1913). Detachable rim attachments to wheels. L. Forse, Grove avenue, Yeovil, Somerset.

652 (1913). Heating apparatus for rubber vulcanizing press. T. Gare, Cumberland House, Park Lane, Wembley, London.

680 (1913). Playing ball. F. Khittl, 20 Mauerkirchenstrasse, Munich, Germany.

765 (1913). A cloak with a detachable waterproof lining. P. J. Hime, 27 Buckland Crescent, Hampstead; B. H. Bayliss, Victoria Lodge, Blenheim Road, Raynes Park, and C. and L. Spiro, 51 High street, Whitechapel—all in London.

794 (1913). Squeegees comprising rubber strips. W. Taylor, 7 Derby street, Kings Cross, London.

808 (1913). Process for forming pneumatic tires, balls, dolls, etc. H. Zeumer, 125 Kaiserstrasse, Karlsruhe, Baden, Germany.

827 (1913). Tire attachments to rims. T. Sloper, Southgate Villas, Devizes, Wiltshire.

849 (1913). Coagulating rubber latex. E. J. Byrne, Norwich Union Buildings, St. James street, Piccadilly, London.

884 (1913). Breathing apparatus. J. G. Huskisson, Mansfield Rescue Station, Mansfield, Nottingham, and H. C. Jenkins, Meco Works, Moorfields, Sheffield.

905 (1913). An inextensible air tube fitted with an extensible cover. M. D. Rucker, Heimath, Foxley Lane, Purley, Surrey.

929 (1913). Spring wheel with continuous outer rigid ring and metal springs other than helical and volute springs. Blakoe, 62a Queens Road, Bayswater, London.

NEW ZEALAND.

ISSUED MARCH 26, 1914.

32,685. Spare wheel attachment. F. R. Dennison, Oamaru, N. Z.

34,221. Pneumatic wheel. G. R. Taylor, 373 Bath street, Glasgow, Scotland, and R. Whyte, 151 Reid street, Bridgetown, Glasgow.

34,224. Automatic pressure alarm for pneumatic tires. D. Brodie, Clifton, Church street, Croydon, N. S. W., and W. A. Thomas, Talofa, Burwood Road, Burwood, N. S. W.

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

272,995, Class 39b (November 9, 1912). Process for extracting rubber from latices. S. C. Davidson, Belfast, Ireland.

273,027, Class 86c (February 8, 1913). Asbestos woven fabric. Bruno Henschke, Forst i., Lausitz.

273,159, Class 63c (June 22, 1912). Manufacture of a rubber mass for the treads of pneumatic tire covers. Rauhgummi-Verwertungs-Gesellschaft, Hamburg.

273,193, Class 39b (May 29, 1913). Process for manufacture of an elastic mass for the preservation of footwear. Franz Goertz, Schuhwarenhaus, M.-Gladbach.

273,362, Class 39b (March 23, 1913). Process for manufacture of homogeneous masses from colloids, glycerine and mineral oils. Gummi (Foreign) Limited, Westminster, England.

273,482, Class 39b (November 22, 1912). Process for introduction of albumen into rubber. Dr. Werner Esch, Hamburg.

273,708, Class 39b (May 26, 1912). Process for manufacture of a substitute for rubber. Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen.

273,774, Class 39b (April 1, 1913). Process for improving properties of synthetic rubber. Dr. Julius Ephraim, Königgratzerstrasse 68, Berlin.

273,882, Class 30e (December 8, 1912). Manufacture of gloves for surgical operations. Zieger & Wiegand, Leipzig.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

463,470 (August 23, 1913). A. Galibert. Tubes in sized fabric of imitation rubber, and their process of manufacture.

463,479 (September 23). L. L. Petit-Barat. Pneumatic mouthpiece in soft rubber.

463,731 (June 26). E. Tortorolo. Elastic hoop for vehicle wheels.

463,766 (September 23). W. Bednar. Elastic tire.

463,774 (October 11). J. Schönning. Press to shape and vulcanize automobile and bicycle tires.

463,776 (October 13). Société Jean Laval & Co. Row of elastic balls, replacing air chambers in all kinds of vehicles.

463,801 (December 26, 1912). O. Röhm. Process of making an artificial rubber of practical utility.

463,827 (October 20, 1913). C. W. Strohbeck. Improvements in rubber heels.

463,923 (October 22). The B. F. Goodrich Co. Anti-skid device for wheels with rubber tires.

463,927 (October 23). W. Dunbar. Pneumatic tire cover.

463,937 (October 23). Berguerand & Co. Improvements in rubber gloves and other protective appliances.

463,945 (December 30, 1912). L. Cornet & Cuenat. Method of making rubber heels.

464,060 (September 29, 1913). C. Weidmann. Automobile tires.

464,079 (October 9). G. Macchiavello and A. Barbacini. Improved system of re-soling footwear with movable soles and heels.

464,158 (October 27). Olier & Cie. Automatic mixer for rubber and analogous substances.

464,160 (October 28). P. Duret. Vehicle wheel tires.
464,192 (October 28). C. H. Boehringen. Process of coagulating rubber latex.
464,207 (October 29). A. Gruenais. Movable rubber heel.
464,474 (November 6). E. Melin. New process for fixing tires on metallic wheels.
464,323 (October 31). N. Rousselle. Multiple pneumatic tire with annular solid cover.
464,356 (October 31). H. F. Heycock. Improvements in pneumatic tires.
464,425 (November 4). Olier & Cie. Improvements in the fastening of autoclave vulcanizing presses.
464,427 (November 5). H. Reed, M. Lander and C. Lander. Improvements in tires.
464,550 (August 14). J. H. Knight. Improvements in automobile and other wheels.
464,557 (September 19). J. Bader. Pneumatic vehicle tires.
464,589 (October 23). F. F. E. Dupont. Non-bursting pneumatic tire.
464,621 (January 16). L. L. Protin. Mudguard for vehicle wheels.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

263,629 (March 20, 1914). Process of utilizing worn rubber objects. E. Lapisse, rue Montbazon, 19, Tours, France.
263,952 (March 20, 1914). Process and device for the manufacture of syringes on a hard core in one piece with the neck. Montsouris, Société Française de Caoutchouc, Paris.
264,292 (April 18, 1914). Improvements in methods of fixing asbestos and other slabs. Société Anonyme Eternit, Neder-over-Heembeck, Holland.

RUBBER COATS AT NIAGARA AND IN LABRADOR.

By Felix J. Koch.

NEXT time you are in search of some pattern in rubber coats make a little journey to the Labrador coast. You will get more contrasts there than perhaps anywhere else on earth.

Not, of course, that Americans are not addicted to them.

FISHERMEN OF LABORADOR.

Get aboard any great tourist steamer in the summer, let the weather be a bit wet, and from steamer trunks and bags there appears a variety of rubber coats and rubber caps that would do a rubber dealer's heart good to see. Pretty tourist girls, especially, affect these styles, and with seamen's black rubber hats all but enframing their faces, and the latest cut in the rubber coat about their forms, they are most attractive. Fond admirers will lead them to the bridge over the compass for a snapshot.

At Niagara Falls, too, the American and the Canadian take to a different kind. Those who make the trip on the "Maid of the Mist" down almost under the falls, bobbing and tossing with the current, are advised to rent rubber suits, and these of the style shown in the picture. What a sight they are, too, as, thus

AT NIAGARA FALLS.

arrayed, they venture on deck, to let the spray trickle in rivulets down their faces.

But it is up in Newfoundland and Labrador that one meets most with the rain coat. Thirty thousand odd fishermen come to this Northland as soon as the ice melts in the springtime, to take the cod. They live in miserable "telts" or "stages" on the rocks, and it is much preferable to be on the sea to housing up in these fish barns. So, safe in their rubber slickers, these men go out daily after the prolific cod.

Most of them are sold by dealers in St. John's, but here

OFF THE COAST OF LABORADOR.

and there a trader is found going up the coast with a supply of slickers. He sells for cash and his prices are high for the quality he gives. But if one man buys, all buy.

The photographs show a few of the more characteristic specimens in use.

It is estimated that 1,250,000 tires will be required to equip this year's output of Ford automobiles. These tires are supplied by four of the leading American tire manufacturing companies and are received in quantities to keep pace with the production of automobiles. About 400 sets of tires comprise a car load, so that 781 freight cars will be called into service in transporting these tires to the factory, where they are placed on wheels, inflated, the fittings attached and then sent to the car assembling department, emerging as parts of completed cars.

Review of the Crude Rubber Market.

AS it will be recalled, fine Pará and plantation rubbers after a long severance, both stood on April 17 in London at 3s. ½d. (73.99 cents). They almost immediately again parted company, standing on April 30, respectively, at 2s. 11¼d. (71.46 cents) and 2s. 7¼d. (63.35 cents). During the month of May the tendency has continued downward in both cases, the figures on May 25 (at the time of writing) being 2s. 9¾d. (68.41 cents) and 2s. 4d. (56.76 cents). A conservative policy has continued to mark the operations of buyers, no disposition being manifested to anticipate future requirements.

The reports of plantation companies coming to hand indicate a material diminution of costs under the influence of last year's fall in price. These conditions have in various cases led to the reinvestment of the amounts lately distributed in dividends. It is considered in London that the statistical position of rubber is encouraging, it being estimated that the world's present production is fully covered by consumption.

That plantation rubber is coming forward in larger quantity than last year is shown by the fact that the London auction of April 21 included 1,386 tons, as compared with 871 tons offered at the sale of April 29, 1913. The auction of May 5, 1914, comprised 1,190 tons, the prices realized being 2d. to 3d. (4 to 6 cents) lower than those of the previous sale. Out of the total offered some 400 tons consisted of first latex pale crepe and smoked sheet.

At the auction of May 19 1,500 tons were put up for sale, with the result of a further decline on last sale prices of about 2d. (4 cents).

The statistical position of plantation rubber was reported as follows:

	1913,	1914,
Stocks March 31.....*tons*	2,793	3,710
Arrivals in April.....	2,744	3,360
	5,537	7,070
Deliveries in April.....	2,368	3,500
Stock April 30.....	3,169	3,570
Arrivals January 1 to April 30.....	10,503	14,340
Deliveries January 1 to April 30.....	9,350	13,980

Total shipments from Brazil for the rubber year to the end of June 30, 1914, are estimated as representing a shortage of 4,000 tons, as compared with the previous year.

Returns from Amsterdam show stocks April 1, 152 tons; stocks April 30, 98 tons. Deliveries in April had exceeded arrivals by about 50 tons.

At the sale of April 30 practically the whole quantity, about 66 tons (mostly *Hevea*), was sold on the average at full prices, a reduction of 3 per cent. being in some cases recorded on valuations. The next inscription sale was to be held on May 27, and was to include about 135 tons, principally *Hevea*.

The Rotterdam sale of May 8 comprised about 53 tons, of which 35 were Congo, etc., and about 18 *Hevea*. Owing to the keen competition the whole quantity was sold, but on the basis of 2d. (4 cents) below valuations.

At the Antwerp sale of April 28, 343 tons Congos were offered, of which 234 were sold slightly below valuations. Of the plantations the whole 274 tons was practically sold at an advance representing 1d. (2 cents) per pound on valuations. Antwerp stock at end of April was 210 tons against 945 tons at same period last year.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and May 29, the current date:

PARA.	June 1 '13.	May 1, '14.	May 29, '14.
Islands, fine, new.....	84@85	72@	61@63
Islands, fine, old.....	.....	.....	63@64
Upriver, fine, new.....	89@92	74@75	70@71
Upriver, fine, old.....	.....	.....	71@73
Islands, coarse, new.....	40@41	31@	29@30
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	58@59	45@46	42@43
Upriver, coarse, old.....	.....	.....	.....
Cameta	42@43	35@36	32@33
Caucho (Peruvian) ball.....	58@59	45@46	42@43
Caucho (Peruvian)	.....	.....	.....
PLANTATION CEYLON.			
Fine smoked sheet.....	83@	68@69	57@59
Fine pale crepe.....	80@	67@69	57@59
Fine sheets and biscuits.....	79@80	62@67	55@57
CENTRALS.			
Esmeralda, sausage	58@59	45@46	43@44
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	55@56	40@41	42@43
Panama	.....	.....	.....
Mexican plantation, sheet.....	.....	.....	43@46
Mexican, scrap	56@57	43@44	40@42
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	40@42
Guayule	.....	.....	.....
Balata, sheet	.....	.....	64@65
Balata, block	.....	.....	46@49
AFRICAN.			
Lopori, ball, prime.....	.....	53@54	49@53
Lopori, strip, prime.....	.....	.....	.....
Aruwimi	.....	.....	35@47
Upper Congo, ball red.....	.....	.....	40@
Ikelemba	.....	.....	35@45
Sierra Leone, 1st quality.....	.....	.....	37@40
Massai, red.....	.....	49@52	48@50
Soudan Niggers	.....	.....	40@42
Cameroon, ball	.....	35@36	25@33
Benguela	.....	.....	31@32
Madagascar, pinky	.....	.....	.....
Accra, flake	.....	22@23	22@23

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: Conditions as regards commercial paper in the rubber line have ruled about the same for May as in April, there being a good demand for the best names at 4@4½ per cent., and those not so well known 5@5½ per cent., with some of the latter going as high as 6 per cent.

NEW YORK PRICES FOR APRIL (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine	$0.74@0.76	$0.78@0.89	$1.12@1.18
Upriver, coarse	.44@ .47	.54@ .66	.92@ .96
Islands, fine	.69@ .73	.76@ .85	1.10@1.14
Islands, coarse	.31@ .34	.37@ .41	.63@ .66
Cametá	.35@ .37	.39@ .45	.66@ .70

STATISTICS PARA INDIA RUBBER (IN TONS) (INCLUDING CAUCHO).

STATISTICS FOR THE MONTH OF APRIL.

	Pará.	Caucho.	1914. Tons.		1913. Tons.	1912. Tons.	1911. Tons.
Receipts at Pará	2,470	1,360	= 3,830	against	3,540	3,270	3,490
Shipments to Liverpool	720	370	= 1,090	"	1,980	1,290	1,450
Shipments to Continental Ports	200	120	= 320	"	410	440	270
Shipments to America	1,400	1,060	= 2,460	"	1,120	1,350	1,110
American Imports	1,150	880	= 2,030	"	1,410	2,000	1,320
American Deliveries	1,230	970	= 2,200	"	1,670	1,910	1,130
Liverpool Imports	980	400	= 1,380	"	2,100	1,466	1,681
Liverpool Deliveries	1,115	370	= 1,485	"	1,770	1,426	1,128
Continental Imports	280	30	= 310	"	680	230	170
Continental Deliveries	270	30	= 300	"	380	260	230

VISIBLE SUPPLY—1ST MAY, 1914.

	1914. Pará.	1914. Caucho.	1913.	1912.	1911.
Stock in England, Pará, 1st hands	660	.....	1,046	1,530	3,369
Pará, 2nd hands	65	.....	127		812
Caucho	.....	310	710	190	808
Stock in Pará, 1st hands	410	160	750	510	1,650
2nd hands	390	150	340	390	250
Syndicate	810	.....	810	2,240	2,810
Stock in America	230	110	230	180	640
Stock on Continent	40	10	350	40	70
Afloat—Europe	910	490	1,530	1,250	1,180
Afloat—America	850	540	620	440	500
	4,365	1,770			
Total Visible Supply, including Caucho.	6,513		6,503	6,770	12,089

CROP STATISTICS—30TH JUNE, 1913, 30TH APRIL, 1914.

	Pará.	Caucho.	1913/14.	1912/13.	1911/12.	1910/11.
Pará receipts.. 1913/14	26,500	7,690	34,190	36,970	33,380	32,720
Pará receipts.. 1912/13	29,210	7,760				
Pará Shipments to Europe	13,690	4,140	17,830	21,130	17,260	16,880
Pará Shipments to America	12,610	3,530	16,140	17,100	17,500	11,640
England Landings, net			12,265	14,962	12,523	12,833
England Deliveries, net			13,080	14,449	15,873	10,613
America Landings, net			15,190	16,720	19,745	12,090
America Deliveries, net			15,030	16,660	19,465	11,590
Continental Imports, net			3,300	4,360	2,870	2,670
Continental Deliveries, net			3,500	4,105	2,940	2,650

POSITION—1ST MAY, 1914.

Increase in Receipts during April, 1914, against April, 1913	290
Decrease in Receipts—Crop, July/April, 1913/14, against 1912/13	*2,780
Decrease in Deliveries—Crop, July/April, 1913/14, England and Continent, against 1912/13	1,974
Decrease in Deliveries—Crop, July/April, 1913/14, America, against 1912/13	1,630
Decrease in Visible Supply Pará Grades, against 1st May last year	368
Decrease in Stock, England, April 30th, 1914, against April 30th, 1913	848

WM. WRIGHT & CO., Brokers,
London, 1st May, 1914. 21, Mincing Lane, London, E.C.

During the month 35 tons Pará have been shipped from Europe to America.

*A decrease of 2,710 tons Rubber and 70 tons Caucho.

Rotterdam.

HAVELAAR & DE VRIES report [May 14]:

The sale of May 8 included 30 tons Congo, 5½ tons Conaguy and 16 tons *Hevea*. Congos brought irregular prices, but were all sold. Plantations were sold below valuations, in harmony with the movement of the London market. Next sale is fixed for June 5.

Amsterdam.

JOOSTEN & JANSSEN report [May 15]:

At the sales of April 30, *Heveas* realized from par to 3 per cent. below valuations. Next sale was announced for May 27.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound:

	May 29, '14.
Old rubber boots and shoes—domestic	7½@ 7⅝
Old rubber boots and shoes—foreign	7¼@ 7½
Pneumatic bicycle tires	4½@ 4¾
Automobile tires	5½@
Solid rubber wagon and carriage tires	5⅛@
White trimmed rubber	10 @10¼
Heavy black rubber	3¾@ 4
Air brake hose	3⅛@
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	5½@
Foreign auto tires	5¼@

Antwerp.

RUBBER STATISTICS FOR APRIL.

DETAILS.	1914.	1913.	1912.	1911.	1910.
Stocks, March 1...*kilos*	342,330	651,505	359,016	645,614	499,102
Arrivals in April—					
Congo sorts	151,863	385,070	360,605	131,553	340,456
Other sorts	6,123	8,138	15,117	44,791	40,014
Plantation sorts	302,724	246,814	129,715	90,033	49,400
Aggregating	803,040	1,291,527	864,453	911,991	928,972
Sales in April	552,851	301,257	426,940	312,877	458,504
Stocks, April 30	250,189	990,270	437,513	599,114	470,468
Arrivals since January 1—					
Congo sorts	843,496	1,076,786	1,091,077	1,072,515	1,171,286
Other sorts	52,818	43,316	45,735	205,968	120,169
Plantation sorts	944,890	683,711	407,325	257,562	178,094
Aggregating	1,841,204	1,803,813	1,544,137	1,536,045	1,469,549
Sales since January 1	2,150,296	1,324,603	1,781,162	1,525,143	1,540,593

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

MAY 1.—By the steamer *Denis* from Pará and Manaos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	158,900	52,800	170,500	253,900=	636,100
General Rubber Co	133,200	24,100	35,700	32,000=	225,000
Meyer & Brown	69,200	13,400	103,700	105,400=	291,700
Henderson & Korn	53,100	7,100	38,400	38,500=	137,100
H. A. Astlett & Co	.....	22,700	88,900	51,900=	163,500
Robinson & Co	153,900	37,400	66,700	85,200=	343,200
G. Amsinck & Co	12,700	1,400	900	.....=	15,000
Hagemeyer & Brunn	.....	.....	.....	60,600=	60,600
Johnstone, Whitworth & Co.	26,300	.....	8,500	.....=	34,800
W. R. Grace & Co	9,300	.....	.....	32,600=	41,900
Total	616,600	158,900	513,300	660,100=	1,948,900

MAY 8.—By the steamer *Gregory* from Pará and Manaos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	57,100	11,400	63,100	71,500=	203,100
Meyer & Brown	21,400	3,300	51,700	139,300=	215,700
H. A. Astlett & Co	.....	2,100	10,600	21,300=	34,000
Henderson & Korn	17,800	2,000	15,400	28,000=	63,200
W. R. Grace & Co	.....	.....	3,600	22,800=	26,400
General Rubber Co	23,600	200	.....	200=	24,000
Robinson & Co	106,600	18,500	17,000	61,100=	203,200
Total	226,500	37,500	161,400	344,200=	769,600

MAY 8.—By the steamer *Gregory* from Iquitos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown	7,000	.....	3,100	60,200=	70,300
H. A. Astlett & Co	4,300	.....	800	10,500=	15,600
W. R. Grace & Co	.....	.....	.....	15,900=	15,900
G. Amsinck & Co	.....	.....	.....	2,000=	2,000
Total	11,300	.....	3,900	88,600=	103,800

MAY 19.—By the steamer *Dunstan* from Pará and Manaos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
General Rubber Co	202,200	28,200	39,100	100=	269,600
Meyer & Brown	30,500	4,900	68,200	46,700=	150,300
Henderson & Korn	18,400	.....	54,000	52,000=	124,400
L. Hagenaers & Co	6,400	1,700	.....	19,100=	27,200
H. A. Astlett & Co	21,100	16,300	34,000	86,400=	157,800
W. R. Grace & Co	.....	.....	60,100	68,000=	128,100
Hagemeyer & Brunn	15,100	3,200	4,700	18,100=	41,100
Robinson & Co	131,700	9,800	75,700	10,700=	227,900
American Express Co	11,100	.....	.....	.....=	11,100
Johnstone, Whitworth & Co.	.....	.....	14,100	.....=	14,100
Arnold & Zeiss	14,600	700	16,800	68,600=	100,700
Total	451,100	64,800	366,700	369,700=	1,252,300

MAY 20.—By the steamer *Aidan* from Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	75,100	3,200	93,100	43,600=	215,000
General Rubber Co	11,900	1,600	2,800	.....=	16,300
Meyer & Brown	.....	.....	.....	63,000=	63,000
Hagemeyer & Brunn	16,500	1,100	35,800	600=	54,000
G. Amsinck & Co	12,200	1,300	3,600	4,900=	22,000
Henderson & Korn	5,400	700	7,900	28,800=	42,800
H. A. Astlett & Co	20,200	15,800	15,400	40,000=	91,400
American Express Co	10,900	.....	.....	.....=	10,900
Total	152,200	23,700	158,600	180,900=	515,400

PARA RUBBER VIA EUROPE.

		POUNDS.
APRIL 27.—By the *Pretoria*=Hamburg:		
Henderson & Korn (Caucho)		11,500
APRIL 28.—By the *Georgic*=Liverpool:		
Raw Products Co. (Fine)	33,500	
Raw Products Co. (Coarse)	9,000	42,500
APRIL 30.—By the *President Grant*—Hamburg:		
Robert Badenhop (Caucho)	11,200	
Various (Coarse)	2,200	13,400
MAY 2.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer (Fine)		13,500
MAY 7.—By the *Pennsylvania*=Hamburg:		
Henderson & Korn (Coarse)		60,000
MAY 9.—By the *Chicago*=Havre:		
Michelin Tire Co. (Fine)		22,500
MAY 11.—By the *Caronia*=Liverpool:		
Henderson & Korn (Fine)	22,500	
W. R. Grace & Co. (Fine)	6,700	
Robinson & Co	11,200	
Raw Products Co (Coarse)	56,000	96,400
MAY 12.—By the *President Lincoln*=Hamburg:		
Meyer & Brown (Fine)	7,000	
Rubber & Guayule Agency, Inc. (Fine)	7,000	
Ed. Maurer (Fine)	2,000	
Various (Coarse)	11,200	27,200
MAY 16.—By the *Cedric*=Liverpool:		
W. R. Grace & Co (Fine)		2,200
MAY 18.—By the *Nickerie*=Ciudad Bolivar:		
General Export & Commission Co. (Fine)	12,000	
General Export & Commission Co. (Coarse)	4,000	
Yglesias, Lobo & Co. (Fine)	14,000	
Yglesias, Lobo & Co. (Coarse)	3,000	33,000
MAY 18.—By the *Minnetonka*=London:		
Various (Fine)		7,000
MAY 18.—By the *Amerika*=Hamburg:		
Ed. Maurer (Fine)	11,500	
Henderson & Korn (Fine)	18,000	
Various (Fine)	11,200	40,700

OTHER NEW YORK ARRIVALS.

CENTRALS.

		POUNDS.
APRIL 27.—By the *Allianca*=Colon:		
G. Amsinck & Co	1,600	
M. A. De Leon & Co	400	2,000
APRIL 28.—By the *Suriname*=Belize:		
Eggers & Heinlein		800
APRIL 28.—By the *Tennyson*=Bahia:		
J. H. Rossbach Bros. & Co	30,000	
Adolph Hirsch & Co	3,500	33,500
APRIL 29.—By the *Prinz Sigismund*=Colon:		
Andean Trading Co		2,500
MAY 1.—By the *Philadelphia*—Laguayra:		
Scholtz & Marturet	4,000	
American Trading Co	1,000	5,000
MAY 2.—By the *Almirante*=Cartagena:		
R. Del Castillo & Co		1,500
MAY 4.—By the *Colon*=Colon:		
Piza, Nephews & Co		3,500
MAY 4.—By the *Allemania*=Cartagena:		
Caballero & Blanco	1,000	
A. Held	3,500	
Pablo Calvet & Co	100	4,600
MAY 4.—By the *Guantanamo*=Mexico:		
E. Steiger & Co	23,500	
J. A. Medina & Co	600	
American Trading Co	300	
J. Menendez & Co	1,500	
Lawrence Johnson & Co	1,200	
General Export & Commission Co.	500	27,600
MAY 6.—By the *Prinz Joachim*=Colon:		
H. W. Peabody & Co		1,500
MAY 6.—By the *Trent*=Colon:		
A. M. Capen's Sons	5,000	
H. Wolff & Co.	1,500	
C. E. Griffin & Co	1,200	
Mecke & Co	2,000	
Camacho, Roldau & Van Sickel	1,000	
Isaac Brandon & Bros	1,000	
G. Amsinck & Co	600	12,300
MAY 9.—By the *Vandyck*=Bahia:		
J. H. Rossbach Bros. & Co	19,000	
Adolph Hirsch & Co	8,000	27,000
MAY 11.—By the *Graecia*=Colombia:		
A. Held	1,200	
Various	2,000	3,200
MAY 13.—By the *Prince Eitel Frederick*=Colon:		
Andean Trading Co	1,600	
A. Held	1,000	2,600
MAY 14.—By the *Advance*=Colon:		
G. Amsinck & Co	11,500	
J. S. Sembrada & Co	4,000	
Camacho, Roldau & Van Sickel	800	
Wessels, Kulenkampff & Co	600	
Pablo Calvet & Co	1,800	
Meyer Hecht	200	18,900
MAY 14.—By the *Proteus*=New Orleans:		
Various		14,500
MAY 18.—By the *Camaguey*=Mexico:		
E. Steiger & Co	12,500	
German-American Coffee Co	2,500	
Harburger & Stack	200	
Willard Hawes & Co	2,000	
F. Probst & Co	200	
L. Kubie & Co	2,000	
American Trading Co	300	
J. A. Medina & Co	600	
J. Menendez & Co	1,500	
General Export & Commission Co.	200	22,000
MAY 18.—By the *Creole*=New Orleans:		
Various		10,000
MAY 18.—By the *Calamares*=Port Limon:		
Wessels, Kulenkampff & Co		1,000
MAY 19.—By the *Dryden*=Bahia:		
Rossbach Bros. & Co	43,000	
Adolph Hirsch & Co	28,000	71,000

AFRICAN.

		POUNDS.
APRIL 27.—By the *Pretoria*=Hamburg:		
Rubber & Guayule Agency, Inc.	10,500	
Various	7,000	17,500
APRIL 27.—By the *Minneapolis*=London:		
Meyer & Brown	6,500	
Arnold & Zeiss	1,000	
Charles T. Wilson	3,000	
Various	5,000	15,500
APRIL 28.—By the *Vaderland*=Antwerp:		
Various		22,000
APRIL 28.—By the *Georgic*=Liverpool:		
Various		2,500
APRIL 30.—By the *Oceanic*=Southampton:		
Arnold & Zeiss	56,500	
Various	55,000	111,500
APRIL 30.—By the *President Grant*=Hamburg:		
Ed. Maurer	9,000	
Rubber & Guayule Agency, Inc.	1,000	
Various	2,500	12,500
APRIL 30.—By the *Santa Anna*=Marseilles:		
Various		25,000
MAY 2.—By the *Baltic*=Liverpool:		
Earle Bros.	4,500	
W. R. Grace & Co	4,500	
Various	23,000	32,000
MAY 2.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Meyer & Brown	20,000	
Ed. Maurer	10,000	
W. R. Grace & Co	6,000	
Henderson & Korn	2,000	
Arnold & Zeiss	37,000	
Various	5,000	80,000
MAY 4.—By the *Floride*=Havre:		
Johnstone, Whitworth & Co	11,200	
Various	15,000	26,200
MAY 4.—By the *St. Louis*=Southampton:		
Arnold & Zeiss		22,500
MAY 5.—By the *Kroonland*=Antwerp:		
Meyer & Brown		7,000
MAY 6.—By the *Venezia*=Lisbon:		
Hagemeyer Trading Co	14,000	
Rubber & Guayule Agency, Inc.	70,000	
Various	50,000	134,000
MAY 7.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer	1,500	
Rubber & Guayule Agency, Inc.	11,000	
Various	1,500	14,000
MAY 9.—By the *Chicago*=Havre:		
Meyer & Brown		60,000
MAY 11.—By the *Adriatic*=Liverpool:		
Johnstone, Whitworth & Co	4,500	
Earle Bros.	2,000	6,500
MAY 11.—By the *Caronia*=Liverpool:		
Arnold & Zeiss		45,000
MAY 11.—By the *St. Paul*=Southampton:		
Meyer & Brown	2,500	
Various	17,000	19,500
MAY 12.—By the *President Lincoln*=Hamburg:		
Rubber & Guayule Agency, Inc.	5,200	
Ed. Maurer	11,200	
Various	7,000	23,400
MAY 12.—By the *Frankdale*=Lisbon:		
Various		63,500
MAY 12.—By the *Finland*=Antwerp:		
Arnold & Zeiss	40,000	
Various	20,000	60,000
MAY 14.—By the *New York*=Southampton:		
Arnold & Zeiss		65,000
MAY 15.—By the *Lusitania*=Liverpool:		
Arnold & Zeiss		25,000
MAY 16.—By the *Cedric*=Liverpool:		
General Rubber Co		11,200
MAY 18.—By the *Lapland*=Antwerp:		
Arnold & Zeiss	7,500	
Various	32,500	40,000
MAY 18.—By the *Rochambeau*=Havre:		
Various		6,000
MAY 18.—By the *Minnetonka*=London:		
Arnold & Zeiss	11,200	
Various	7,500	18,700
MAY 18.—By the *Amerika*=Hamburg:		
Ed. Maurer	4,000	
W. Stiles	4,500	
Various	11,200	19,700
MAY 19.—By the *Germania*=Lisbon:		
Various		60,000

EAST INDIAN.

[*Denotes plantation rubber.]

			POUNDS.
APRIL 25.—By the *Stolzenfels*=Colombo:			
Meyer & Brown	*16,000		
Rubber & Guayule Agency, Inc.	*20,000		
Henderson & Korn	*13,500		
W. Stiles	*3,500		
Robinson & Co	*11,200		
Various	*82,800	*147,000	
APRIL 27.—By the *Pretoria*=Hamburg:			
Rubber & Guayule Agency, Inc.	*20,000		
W. Stiles	*11,200		
Various	*20,000	*51,200	
APRIL 27.—By the *Minneapolis*=London:			
Meyer & Brown	*112,000		
Adolph Hirsch & Co	*11,200		
W. R. Grace & Co	*9,500		
Johnstone, Whitworth & Co	*75,000		
Henderson & Korn	*80,000		
General Rubber Co	*345,000		
Robert Badenhop	*11,200		
Rubber Trading Co	*30,000		
Arnold & Zeiss	*86,000		
Earle Bros.	*3,500		
Robinson & Co	*18,500		
Rubber & Guayule Agency, Inc.	*5,600		
Charles T. Wilson	*140,000		
Raw Products Co	*2,000		
L. Littlejohn & Co	*4,500		
Goodyear Tire & Rubber Co	*300,000		
Various	*12,000	*1,246,000	
APRIL 27.—By the *New Amsterdam*=Amsterdam:			
Meyer & Brown	*69,500		
Arnold & Zeiss	*4,500		
W. Stiles	*5,600		
Robinson & Co	*13,500		
Rubber Trading Co	*12,000		
Various	*12,000	*117,100	
APRIL 28.—By the *Vaderland*=Antwerp:			
Meyer & Brown	*88,000		
Arnold & Zeiss	*35,000		
Various	*35,000	*158,000	
APRIL 30.—By the *Oceanic*=Southampton:			
Henderson & Korn	*37,000		
Robinson & Co	*4,500		
Earle Bros.	*3,500		
W. R. Grace & Co	*6,700		
Johnstone, Whitworth & Co	*22,500		
Goodyear Tire & Rubber Co	*50,000		
Arnold & Zeiss	*155,000		
Various	*45,000	*324,200	
APRIL 30.—By the *President Grant*=Hamburg:			
Meyer & Brown	*17,000		
W. R. Grace & Co	*11,200		
Henderson & Korn	*5,600		
W. Stiles	*13,500		
Rubber & Guayule Agency, Inc.	*10,000		
Various	*25,000	*82,300	

MAY 2.—By the *Baltic*=Liverpool:

Arnold & Zeiss	*2,200	
Johnstone, Whitworth & Co.	*4,500	*6,700

MAY 2.—By the *Kaiserin Auguste Victoria*=Hamburg:

Meyer & Brown	*33,500	
Henderson & Korn	*35,000	
Various	*35,000	*103,500

MAY 4.—By the *Florida*=Havre:

Johnstone, Whitworth & Co.	*90,000	
Various	*11,200	*101,200

MAY 4.—By the *St. Louis*=Southampton:

Meyer & Brown	*14,000	
Arnold & Zeiss	*30,000	
Henderson & Korn	*40,000	
W. R. Grace & Co.	*1,100	
Ed. Maurer	*11,200	
Robert Badenhop	*11,200	
Various	*2,000	*109,500

MAY 4.—By the *Kansas*=Colombo:

Meyer & Brown	*87,000	
Rubber & Guayule Agency, Inc.	*9,000	
Arnold & Zeiss	*45,000	
W. Stiles	*17,500	
W. R. Grace & Co.	*40,000	
Ed. Maurer	*12,500	
Various	*169,500	*380,500

MAY 4.—By the *Kasama*=Singapore:

The B. F. Goodrich Co.	*30,000	
Arnold & Zeiss	*85,000	
Henderson & Korn	*40,500	
W. R. Grace & Co.	*11,200	
Ed. Maurer	*10,000	
L. Littlejohn & Co.	*30,000	
Various	*43,000	*249,700

MAY 4.—By the *Minnewaska*=London:

Meyer & Brown	*38,000	
General Rubber Co.	*15,000	
W. R. Grace & Co.	*12,500	
Johnstone, Whitworth & Co.	*30,500	
Charles T. Wilson	*80,000	
Adolph Hirsch & Co.	*33,500	
Henderson & Korn	*210,000	
Various	*75,000	*494,500

MAY 5.—By the *Noordam*=Amsterdam:

Meyer & Brown	*90,500	
Manhattan Rubber Mfg. Co.	*7,000	
Various	*13,500	*111,000

MAY 5.—By the *Kroonland*=Antwerp:

Meyer & Brown	*170,000	
Various	*37,000	*207,000

MAY 6.—By the *Olympic*=Southampton:

Meyer & Brown	*101,000	
W. Stiles	*5,000	
Ed. Maurer	*5,000	
Earle Bros.	*2,000	
Arnold & Zeiss	*365,000	
Rubber Trading Co.	*50,000	
Johnstone, Whitworth & Co.	*22,500	
L. Blitz	*4,500	
Henderson & Korn	*6,000	
Goodyear Tire & Rubber Co.	*140,000	
Various	*48,000	*749,000

MAY 7.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	*16,000	
W. R. Grace & Co.	*13,500	
Ed. Maurer	*5,600	
Henderson & Korn	*4,500	
Rubber & Guayule Agency, Inc.	*19,000	*58,600

MAY 9.—By the *Chicago*=Havre:

Michelin Tire Co.		*35,000

MAY 11.—By the *St. Paul*=Southampton:

Meyer & Brown	*5,500	
Ed. Maurer	*11,200	
Rubber & Guayule Agency, Inc.	*2,200	
Henderson & Korn	*22,500	
Arnold & Zeiss	*90,000	
A. W. Brunn	*22,500	
Various	*45,000	*198,900

MAY 12.—By the *President Lincoln*=Hamburg:

Meyer & Brown	*21,000	
Rubber & Guayule Agency, Inc.	*15,000	
Arnold & Zeiss	*7,000	
Henderson & Korn	*33,500	
W. Stiles	*9,000	
Ed. Maurer	*10,000	
Various	*17,500	*113,000

MAY 12.—By the *Minnehaha*=London:

Meyer & Brown	*40,500	
W. R. Grace & Co.	*53,500	
Charles T. Wilson	*65,000	
General Rubber Co.	*450,000	
Western Electric Co.	*17,000	
Earle Bros.	*3,000	
Robinson & Co.	*16,000	
Henderson & Korn	*157,000	
Johnstone, Whitworth & Co.	*65,000	
Various	*113,700	*980,700

MAY 12.—By the *Ryndam*=Amsterdam:

Meyer & Brown	*3,500	
Robinson & Co.	*7,000	
Manhattan Rubber Mfg. Co.	*6,000	*16,500

MAY 12.—By the *Finland*=Antwerp:

Meyer & Brown	*160,000	
Arnold & Zeiss	*52,500	
General Rubber Co.	*25,000	
Various	*18,000	*255,500

MAY 14.—By the *New York*=Southampton:

Arnold & Zeiss	*33,500	
Robinson & Co.	*22,500	*56,000

MAY 15.—By the *Kentucky*=Singapore:

Meyer & Brown	*30,000	
Arnold & Zeiss	*175,000	
Ed. Maurer	*25,000	
Henderson & Korn	*45,000	
The B. F. Goodrich Co.	*200,000	
Ed. Boustead & Co.	*10,000	
Various	*215,000	*700,000

MAY 16.—By the *Indradeo*=Singapore:

Meyer & Brown	*40,000	
Gravenhorst & Co.	*1,000	
Ed. Boustead & Co.	*22,500	
The B. F. Goodrich Co.	*7,000	
Robinson & Co.	*12,000	
Henderson & Korn	*30,000	
Ed. Maurer	*27,500	
Johnstone, Whitworth & Co.	*11,200	
Goodyear Tire & Rubber Co.	*90,000	
Various	*70,000	*311,200

MAY 18.—By the *Kabinga*=Colombo:

Meyer & Brown	*53,000	
Arnold & Zeiss	*62,500	
Rubber & Guayule Agency, Inc.	*8,500	
H. W. Peabody & Co.	*7,000	
W. R. Grace & Co.	*22,500	
Various	*40,000	*193,500

MAY 18.—By the *Amerika*=Hamburg:

Meyer & Brown	*11,200	
Rubber & Guayule Agency, Inc.	*4,500	
Henderson & Korn	*2,500	
Various	*13,000	*31,200

MAY 18.—By the *Minnetonka*=London:

Meyer & Brown	*13,500	
Ed. Maurer	*22,500	
W. R. Grace & Co.	*25,000	
General Rubber Co.	*85,000	
Charles T. Wilson	*65,000	
Henderson & Korn	*205,000	
Johnstone, Whitworth & Co.	*35,000	
Rubber Trading Co.	*11,200	
Robert Badenhop	*7,000	
W. Stiles	*3,000	
Robinson & Co.	*10,000	
Rubber & Guayule Agency, Inc.	*22,500	
Arnold & Zeiss	*90,000	
Goodyear Tire & Rubber Co.	*90,000	
A. W. Brunn	*23,500	
Various	*55,000	*763,200

MAY 18.—By the *Lapland*=Antwerp:

Meyer & Brown	*100,000	
Arnold & Zeiss	*122,500	
Various	*12,500	*235,000

MAY 18.—By the *Rotterdam*=Amsterdam:

Arnold & Zeiss	*18,000	
General Rubber Co.	*2,200	
Robinson & Co.	*13,500	
Rubber Trading Co.	*7,000	
Various	*25,000	*65,700

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—APRIL, 1914.

Imports:	Pounds.	Value.
India rubber	16,296,509	$8,453,519
Balata	97,220	51,336
Gutta percha	108,466	19,488
Gutta jelutong (Pontianak)	1,751,999	70,440
Total	18,254,194	$8,594,783
Exports:		
Balata	4,000	1,640
Gutta percha	330	195
Reclaimed rubber	147,914	23,910
Rubber scrap, imported	1,132,605	77,296
Rubber scrap, exported	277,733	29,413

BOSTON ARRIVALS.

IMPORTS IN APRIL, 1914.

	Pounds.	Value.
Gutta jelutong	629,080	$30,424
Gutta percha	2,232	451
India rubber	314,599	143,928

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS FOR APRIL, 1914 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Berringer & Co.	103,577	37,065	154,190	186,297	481,129	155,538	36,070	39,012	73,673	304,293	785,422
General Rubber Co. of Brazil	79,450	17,383	56,198	145,206	298,237	37,409	4,113	1,320	31,210	74,052	372,289
J. Marques	88,771	13,393	113,807	190,145	406,116	71,803	6,145	1,520	5,320	84,788	490,904
Seligmann & Co.	7,678	.....	1,680	.....	9,358	28,984	.....	1,092	6,050	36,126	45,484
Suarez Hermanos & Co., Ltd.	6,032	679	430	30,288	37,429	99,391	.....	16,867	73,376	189,634	227,063
Pires Teixeira & Co.	7,650	3,879	70,835	36,400	118,764	40,431	.....	.....	.....	40,431	159,195
Sundry exporters	1,530	170	990	1,680	4,370	.....	.....	.....	.....	.....	4,370
Itacoatiara, direct	1,920	320	520	600	3,360	465	.....	400	1,235	2,100	5,460
	296,608	72,889	398,650	590,616	1,358,763	434,021	46,328	60,211	190,864	731,424	2,090,187
Manáos, direct	388,367	88,104	140,586	431,336	1,048,393	169,755	32,715	68,798	152,956	424,224	1,472,617
Iquitos, direct	16,390	.....	1,980	33,257	51,627	82,414	5,301	19,073	148,898	255,686	307,313
Total	701,365	160,993	541,216	1,055,209	2,458,783	686,190	84,344	148,082	492,718	1,411,334	3,870,117

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING MARCH, 1914 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Berringer & Co.	151,322	16,206	110,090	51,899	329,517	425,128	104,761	74,494	188,597	792,980	1,122,497
General Rubber Co. of Brazil	143,317	29,660	117,009	82,803	372,789	103,851	12,386	6,410	74,421	197,068	569,857
J. Marques	46,100	15,281	114,179	141,546	317,106	98,970	7,480	.....	30,993	137,443	454,549
Seligmann & Co.	28,484	.....	4,307	28,595	61,386	81,534	.....	9,891	8,104	99,529	160,915
Suarez Hermanos & Co., Ltd.	17,726	.....	6,292	33,008	57,026	97,273	.....	5,687	68,484	171,444	228,470
Pires Teixeira & Co.	5,440	2,890	66,000	3,640	77,970	40,120	.....	.....	.....	40,120	118,090
Sundry exporters	21,941	3,522	8,908	8,790	43,161	159,095	8,382	26,311	24,475	218,263	261,424
Itacoatiara, direct	5,600	600	2,600	5,400	14,200	5,243	330	2,430	6,274	14,277	28,477
	419,930	68,159	429,385	355,681	1,273,155	1,011,214	133,339	125,223	401,348	1,671,124	2,944,279
Manáos, direct	277,485	78,132	137,098	208,046	700,761	802,474	127,355	160,710	445,649	1,536,188	2,236,949
Total, March, 1914	697,415	146,291	566,483	563,727	1,973,916	1,813,688	260,694	285,933	846,997	3,207,312	5,181,228
Total, February, 1914	620,533	188,066	504,522	535,015	1,848,136	1,761,510	153,908	195,389	885,498	2,996,305	4,844,441
Total, January, 1914	914,867	202,392	692,568	238,354	2,048,181	1,094,577	146,610	167,156	291,274	1,699,617	3,747,798

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RUBBER ARRIVALS FROM THE CONGO.

APRIL 16.—By the steamer *Elisabethville:*

Bunge & Co.	(Comfina) *kilos*	9,000	
do	(Belgika)	2,100	
do	(Forminière)	2,600	
do	(Grands Lacs)	7,000	
do	(Intertropicale)	4,200	
do		1,600	
Société Coloniale Anversoise	(Comminière)	14,800	
do	(Kasai)	19,900	
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	(Crevelde)	6,300	
Comptoir Colonial franco-belge (Charles Dethier)	(American Congo Cy)	6,800	
W. Mallinckrodt & Co.	(Alimaienne)	4,500	
Willaert Frères		5,500	84,300

MAY 5.—By the steamer *Anversville:*

Bunge & Co.	(Belgika) *kilos*	1,420	
Société Coloniale Anversoise	(Lomami)	2,240	
do	(H. C.)	87	
do	(Comminière)	4,231	
do	(Intertropicale)	13,460	
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	(Kasai)	61,000	
do	(Comfina)	19,600	
do	(Crevelde)	3,200	..
Comptoir Colonial franco-belge (Charles Dethier)	(American Congo Cy)	500	105,738

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to April 20, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.]

	1913.	1914.
To Great Britain ..... *pounds*	3,501,382	5,118,201
To United States	2,270,021	2,119,774
To Belgium	322,696	1,786,930
To Australia	176,617	34,041
To Japan	75,502	128,899
To Germany	64,862	644,102
To Austria	25,515	.....
To Italy	22,460	.....
To Holland	992	.....
To Russia	.....	98,482
To France	.....	90,483
To Straits Settlements	.....	35,852
To India	.....	500
Total	6,460,047	10,057,264

(Same period, 1912, 3,737,826; same period, 1911, 1,509,408 pounds.)

The export figures of rubber for 1914 given in the above table include the imports re-exported, viz.: 1,221,947 pounds. To arrive at the approximate quantity of Ceylon rubber exported for 1914 to date, deduct the quantity from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. April 14.	Malacca. March 31.	Penang. Feb. 28.	Port Swettenham. March 31.	Total.
Great Britain..*pounds*	5,943,529	1,267,175	3,243,867	6,216,643	16,671,214
Continent	586,246	.....	116,400	810,350	1,512,996
Japan	265,344	.....	.....	.....	265,344
Ceylon	96,374	.....	174,000	436,390	706,764
United States	2,606,865	.....	182,933	136,590	2,926,388
Australia	20,342	.....	.....	.....	20,342
Total, 1914.....	9,518,700	1,267,175	3,717,200	7,599,973	22,103,048
Total, 1913.....	7,062,458	.....	2,110,666	7,604,588	16,777,712
Total, 1912.....	3,727,218	.....	847,722	3,945,893	8,520,833
Total, 1911.....	1,676,849	.....	330,267	8,458,123	10,465,239

FRENCH RUBBER STATISTICS FOR 1913.

Statistics show that the total of French rubber imports for 1913 was 17,440 tons, distributed as follows: Havre, 8,228 tons; Paris, 2,634 tons; Bordeaux, 2,538 tons; Boulogne, 934 tons; Marseilles, 407 tons; Dunkirk, 168 tons; various ports, 2,531 tons. Exports were 10,687 tons.